UNIVERSIDAD AUTÓNOMA DE MADRID
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Calidad de Vida en Personas con Hipertensión Pulmonar

TESIS DOCTORAL

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Resumen

La hipertensión pulmonar (HP) es un trastorno de la vasculatura pulmonar caracterizado por el aumento progresivo de la resistencia vascular y la presión arterial pulmonar. La HP produce síntomas como la falta de aliento, reducida capacidad ejercicio físico, dolor de pecho, edema, y síncope. A pesar de recientes avances en materia de atención clínica y tratamientos, la calidad de vida de las personas con HP continua siendo notablemente afectada. Sin embargo, las investigaciones dedicadas al estudio de la calidad de vida de esta población han sido escasas y de enfoque limitado; los estudios realizados hasta la fecha se han centrado exclusivamente en el impacto sobre la calidad de los factores asociados directamente a la severidad de la enfermedad, mientras que el impacto de los factores psicosociales sobre la calidad de vida no ha sido considerado. De acuerdo con esto, el presente trabajo de tesis doctoral tuvo como objetivo general indagar sobre el papel de los factores psicosociales en la promoción de la calidad de vida de las personas con HP. Para ello fueron realizados tres estudios. El primero de ellos consistió en la adaptación en la población española de un instrumento específicamente diseñado para evaluar la calidad de las personas con HP, el *Cambridge Pulmonary Hypertension Outcome Review* (CAMPHOR). El segundo estudio estuvo destinado a alcanzar un mayor entendimiento sobre la naturaleza de la sintomatología de depresión y ansiedad en esta población, haciendo énfasis en la posible relevancia de los factores personales y situacionales. Por último, el tercer estudio estuvo destinado a ofrecer una visión de la calidad de vida de las personas con HP desde la perspectiva del modelo de calidad de vida basado en las necesidades. En un sentido general, los resultados del presente trabajo de tesis doctoral muestran que los factores psicosociales tienen un impacto significativo sobre la calidad de vida de las personas con HP, más allá del impacto del grado de severidad de la enfermedad.

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Índice

Capítulo 1

Introducción

1.1. Hipertensión pulmonar: características clínicas y tratamiento

La hipertensión pulmonar (HP) es un trastorno de la vasculatura pulmonar caracterizado por el incremento progresivo de la presión arterial pulmonar y la resistencia vascular, lo cual puede conducir a una muerte prematura debido al fallo del ventrículo derecho [1]. Según la clasificación clínica vigente, la hipertensión pulmonar está categorizada en cinco grandes grupos de enfermedades de diferentes características etiológicas y fisiopatológicas [2]:

Grupo 1. Hipertensión arterial pulmonar (HAP)

Grupo 2. Hipertensión pulmonar debida a enfermedad cardíaca izquierda

Grupo 3. Hipertensión pulmonar asociada a enfermedades respiratorias y/o a hipoxemia

Grupo 4. Hipertensión pulmonar por enfermedad tromboembólica crónica (HPTEC)

Grupo 5. Hipertensión pulmonar con mecanismos multifactoriales no claros

En la mayoría de los casos la HP surge como una complicación añadida a enfermedades preexistentes relativamente comunes, tales como la enfermedad cardiaca izquierda (Grupo 2) y la enfermedad pulmonar obstructiva crónica (Grupo 3). En contraste, la HAP y la HPTEC pueden manifestarse en muchos casos sin que existan problemas cardiovasculares o pulmonares subyacentes; mientras que en algunos casos la HAP puede estar asociada a la enfermedad congénita del corazón o hipertensión portal, en otros puede ser idiopática, de componente genético, inducida por drogas y toxinas, o estar asociada a trastornos del tejido conectivo, virus de la inmunodeficiencia humana (VIH), o esquistosomiasis. Tanto la HAP como la HPTEC surgen como resultado directo de cambios en la vasculatura pulmonar [3], en el caso de la HAP debido al remodelado y estrechamiento de las pequeñas arterias pulmonares, y en el caso de la HPTEC debido a obstrucciones en arterias pulmonares no tan pequeñas; se ha propuesto que dichas obstrucciones suelen surgir de uno o varios episodios de embolismo

pulmonar, aunque se piensa que también podrían ser el resultado de arteriopatía primaria y disfunción endotelial similar a la observada en la HAP.

La HAP y la HPTEC son enfermedades de difícil diagnóstico [4]. A diferencia de otros tipos de HP, la HAP y la HPTEC son consideradas enfermedades raras debido a que presentan una extremadamente baja prevalencia, la cual se sitúa entre 15 - 60 casos por millón de habitantes y 3,2 casos por millón de habitantes, respectivamente [1,5] . Además, en la mayoría de los casos los pacientes pueden acudir a consulta aquejados por síntomas inespecíficos, tales como falta de aliento, reducida capacidad de ejercicio, fatiga, edema, dolor de pecho, y síncope. En conjunto, estos factores contribuyen a que en muchas ocasiones los pacientes puedan recibir diagnósticos erróneos y tengan que visitar varios especialistas y centros de salud antes de que el diagnóstico correcto pueda ser establecido. Como consecuencia, en muchos casos la enfermedad no es detectada de forma precoz [4].

La HP es actualmente un trastorno incurable para la gran mayoría de los casos. Solamente los pacientes con HPTEC que resulten aptos según una serie de criterios clínicos pueden ser curados mediante una endarterectomia pulmonar, el cual precisamente constituye el tratamiento de elección para la HPTEC. En los casos de HP correspondiente a los Grupos 2 y 3, el tratamiento va dirigido fundamentalmente a tratar las enfermedades subyacentes. Por su parte, el tratamiento de la HAP consiste de forma general en ralentizar la progresión de la enfermedad y en aliviar los síntomas mediante tratamientos específicos para la HAP [1]. Sin embargo, el desarrollo de dichos tratamientos ha tomado lugar recientemente; aún a principios de los 90's éste consistía principalmente en el apoyo paliativo a las personas afectadas y el trasplante de corazón y/o pulmón; en aquel entonces la mediana de esperanza de vida alcanzaba solamente los 2,8 años [6]. Ha sido durante las últimas dos décadas que se ha expandido notablemente

el arsenal de opciones terapéuticas destinadas a hacer frente a la HAP, las cuales han comenzado a transformar lo que un día fue un "diagnóstico de letalidad inmediata en un trastorno caracterizado por una progresiva incapacidad funcional" [7]. Actualmente se dispone de cinco clases de medicamentos para el tratamiento de la HAP: los análogos de prostaciclinas, los inhibidores de la fosfodiesterasa 5, los estimuladores de gualinato ciclasa, los agonistas de los receptores de prostaciclinas, y los antagonistas de los receptores de endotelina. Esta variedad de medicamentos ha permitido hacer frente a los diferentes mecanismos fisiopatológicos implicados en la etiología y progresión de la HAP. Diversos estudios han mostrado su eficacia a través de mejoras en la capacidad de ejercicio físico y la hemodinámica [1]. Aún así, la HAP continúa estando asociada a una limitada esperanza de vida; los resultados de un reciente estudio realizado en un centro de referencia español develaron una mediana de supervivencia de 9 años (IC 95% = 7,53-11,60) durante los últimos 30 años [8]. Sin embargo, también se muestra que desde el 2004 los pacientes han sido diagnosticados en un estadio más temprano de su enfermedad, lo cual ha sido identificado como un importante predictor de la supervivencia.

Tal y como se muestra anteriormente, la vida de las personas con HAP y HPTEC trae consigo retos algo diferentes que los del resto de pacientes con HP. La HAP y HPTEC pueden ocurrir en muchos casos sin un previo deterioro cardiovascular, por lo que pueden resultar inesperadas para los pacientes. Además, son enfermedades raras y necesitan cuidados médicos muy específicos. Por estas razones, el presente trabajo de tesis estará principalmente enfocado en HAP y HPTEC.

1.2. Aspectos relacionados con la calidad de vida

El estudio de la calidad de vida en pacientes con HAP/HPTEC constituye un área de investigación relativamente joven [4]. Tan recientemente como en la década de los 90's, los esfuerzos de investigación estaban prácticamente en su totalidad dirigidos a encontrar una cura y a desarrollar tratamientos específicos. Sin embargo, a pesar de que el número de estudios llevados a cabo hasta la fecha no es extenso, la evidencia apunta de forma consistente a que el impacto de estas enfermedades puede abarcar prácticamente todas las áreas de la vida de los pacientes. A continuación se ofrece un breve recuento de los hallazgos de dichas investigaciones y de las problemáticas existentes en esta área de investigación.

1.2.1. Discapacidad funcional

El deterioro físico y funcional asociado a la HAP/HPTEC puede llegar a ser lo suficientemente grave como para interferir con las actividades más simples del día a día. De forma habitual, dicho deterioro suele ser evaluado mediante la clasificación de clase funcional de la organización mundial de la salud (OMS) o la New York Heart Association. Dichas clasificaciones cuentan con un total de cuatro clases; mientras que en las clases funcionales I/II los pacientes pueden apenas sentir síntomas, en la clase funcional III los pacientes pueden presentar síntomas al realizar una actividad física moderada, y en la clase funcional IV pueden incluso presentar síntomas en estado de reposo. De acuerdo con ello, los pacientes en un estado moderado/avanzado de la enfermedad pueden mostrar dificultades por el simple hecho de subir un tramo de escaleras, llevar la bolsa de la compra, o recoger un objeto del piso. De hecho, hasta un 56% de los pacientes con HAP ha reportado que su nivel de actividad se ve notablemente restringido debido a su enfermedad [9].

El nivel de sintomatología y la discapacidad funcional son quizás los aspectos que más atención han recibido en relación al estudio de la calidad de vida en esta población. De forma consistente ha sido mostrado que la discapacidad funcional está asociada a niveles más bajos de calidad de vida relacionada con la salud, así como con una mayor incidencia de problemas emocionales [10,11].

1.2.2. Dificultades emocionales

El número de estudios destinados a indagar sobre el estado emocional de los pacientes con HAP/HPTEC no ha sido extenso. Sin embargo, los resultados han mostrado de forma consistente que los pacientes con HP presentan un riesgo elevado de presentar problemas emocionales y trastornos psiquiátricos. La mayoría de estos estudios se ha enfocado en la sintomatología de ansiedad y depresión [12 – 15], mostrando que ésta está asociada a la presencia de mayores niveles de discapacidad funcional y a más bajos niveles de calidad de vida relacionada con la salud. Además, la prevalencia de trastornos psiquiátricos ha sido estimada en un 35%, incluyendo un 15,9% de casos de trastorno depresivo mayor, un 10,4% de casos con trastorno de pánico, un 5,5% de casos de trastornos de loa conducta alimentaria, y un 4,3% de casos de abuso y dependencia de alcohol [10].

Las dificultades emocionales de los pacientes con HAP han sido también abordadas en al menos dos estudios cualitativos [16 – 17]. Ambos estudios mostraron que vivir con HAP puede estar asociado con altos niveles de incertidumbre; en muchos casos la incertidumbre podía manifestarse justo después del diagnóstico, en cuanto los pacientes tomaban consciencia acerca de la potencial gravedad de la HP; en otros, la incertidumbre podía manifestarse junto a la ansiedad y el miedo a que empeorara el estado físico; muchos participantes comentaban sentir miedo de sobrepasar sus

umbrales de esfuerzo y provocarse la aparición de síntomas. Otro tema recurrente en estos artículos estuvo relacionado con el trabajo constante de los pacientes en términos de la aceptación de la enfermedad y sus tratamientos. Por una parte, la mayoría de los pacientes sentían haber aceptado su enfermedad como parte de sus vidas y habían buscado formas de seguir adelante. Por otra parte sin embargo, la enfermedad requería de un trabajo de aceptación diaria en los casos en que los síntomas no remitían en su totalidad, o en casos en los que los pacientes recibían tratamientos invasivos.

1.2.3. Ámbito social

La HAP y HPTEC son enfermedades raras, término que hace referencia a enfermedades que afectan a no más de 5 por cada 10 000 habitantes. Según la Comisión Europea sobre Enfermedades Raras, se estima que actualmente existen entre 5,000 y 8,000 enfermedades raras que afectan alrededor de 29 millones de personas dentro de la Comunidad Europea [19]. A pesar de esta gran variedad, la vida de las personas que padecen enfermedades raras ha sido tradicionalmente impactada por circunstancias similares, tales como la falta de recursos destinados a la investigación y al desarrollo de tratamientos, y la falta de conocimiento y consciencia social sobre las mismas. Sin duda, la HAP y la HPTEC no han sido una excepción. Tales circunstancias quizás podrían explicar el relativamente tardío desarrollo de tratamientos para la HAP, el limitado número de investigaciones sobre la calidad de vida de los pacientes con HAP y HPTEC, y la falta de conocimiento sobre estas enfermedades, no solo a nivel social sino también dentro del ámbito sanitario; a día de hoy todavía existen varios países europeos que no cuentan con centros especializados en el tratamiento de la HAP y la HPTEC.

Hasta el momento la investigación destinada a establecer el impacto de los diversos factores sociales en la calidad de vida de los pacientes con HAP y HPTEC ha

sido muy limitada. Sin embargo, una reciente encuesta realizada con pacientes de cinco países europeos, incluyendo a España, muestró que la calidad de vida de los pacientes es afectada por diversos factores sociales. El principal tema de consternación de los pacientes, según los resultados de esta encuesta, fue el impacto negativo de la enfermedad sobre la capacidad para trabajar. La mayoría de los pacientes (85%) y una parte considerable de los cuidadores (29%) reportó que la enfermedad había afectado su vida profesional, lo cual tuvo un fuerte impacto en la renta familiar. Otros estudios también han reportado que entre un 45% y un 71% de los pacientes muestran incapacidad para trabajar. Además de tener un impacto directo sobre los ingresos, la imposibilidad de trabajar resulta también un una reducción del contacto social de los pacientes. Así, la pérdida de las redes de contacto social asociada con la discapacidad funcional puede contribuir significativamente a la sensación de aislamiento. Según los resultados de la encuesta, dicha sensación de aislamiento se puede ver acrecentada por la falta de conocimiento y consciencia social acerca de la enfermedad; un 55% de los pacientes reportó sentirse incomprendido incluso dentro del círculo de familiares y amigos cercanos [9].

1.3. Investigación sobre calidad de vida en hipertensión pulmonar

El incremento de la calidad de vida en pacientes con HP ha ido cada vez ganando más relevancia como meta terapéutica, de forma paralela a los avances en materia de tratamiento y atención clínica. Por una parte, dichos avances han resultado en mejoras en diferentes indicadores de salud y en la supervivencia, tal y como se ha mencionado anteriormente. Pero por otra parte, los incrementos en la supervivencia han hecho quizás más evidente los diferentes problemas que siguen afectando la calidad de vida de un gran número de pacientes. Quizás debido a un incremento del nivel de

consciencia sobre estos aspectos, el número de estudios sobre calidad de vida en esta población ha ido creciendo durante la última década. Sin embargo, la investigación sobre calidad de vida en HP ha estado plagada por algunas limitaciones, algunas de ellas de carácter general y otras más específicas al área de la HP.

A pesar de la popularidad del término "calidad de vida" dentro de la literatura médica y psicológica, resulta difícil apuntar a una definición o forma de evaluación unitaria del concepto de calidad de vida. La calidad de vida ha sido conceptualizada por varios teoristas como un fenómeno multidimensional y subjetivo, que incorpora aspectos relacionados con el estado de salud pero también con otras áreas de la vida. Sin embargo, estas propuestas teóricas no siempre han sido trasladadas a la investigación empírica, lo cual a veces ha creado inconsistencias y falta de entendimiento acerca de lo que supone la calidad de vida. El término calidad de vida por ejemplo ha sido en ocasiones utilizado de forma indistinta con otros términos, como por ejemplo "calidad de vida relacionada con la salud", o incluso "estado de salud". Dicha falta de entendimiento es también acrecentada por el hecho de que en muchas ocasiones no se incluyen marcos teóricos o modelos explicativos que puedan contribuir al entendimiento de lo que debe entenderse por calidad de vida. Este tipo de problemas, presentes en la literatura sobre calidad de vida de forma general, han estado también presentes en los estudios realizados dentro del ámbito de la HP [19,20].

Por su parte, tales problemas conceptuales han llevado también a problemas metodológicos relacionados con la evaluación de la calidad de vida y la calidad de vida relacionada con la salud. Una gran parte de los estudios que han sido llevados a cabo en el ámbito de la HP han utilizado instrumentos genéricos, de calidad de vida relacionada con la salud, o desarrollados para otras enfermedades. Este tipo de instrumentos sin embargo no abordan muchas de las problemáticas y síntomas específicos a la HP, lo

cual pone en duda la validez de los resultados de estos estudios. Además, muchos de estos instrumentos han mostrado una pobre sensibilidad en la detección de cambios en el estado de salud de los pacientes. En muchos casos se han utilizado también instrumentos de estado de salud (SF-36) para la evaluación de la calidad de vida [21]; tal y como se comentaba en el párrafo anterior, esto parece indicar que en algunos casos puede haber falta de entendimiento acerca del concepto de calidad de vida, así como de la importancia de seleccionar adecuadamente los instrumentos para su evaluación. Tal y como ya ha sido planteado por otros autores, resulta importante saber distinguir entre calidad de vida y estado de salud, debido a que el no hacerlo puede llevar a errores en la interpretación de resultados y toma de decisiones.

1.4. El presente trabajo de tesis

El presente trabajo de tesis tiene como objetivo general contribuir a llenar un vacío en el estudio de la calidad de vida en HP, y para ello fueron realizados tres estudios. El primero de ellos consistió en la adaptación de la escala *Cambridge Pulmonary Hypertension Outcome Review* (CAMPHOR) para uso en población española; hasta el momento la evaluación de la calidad de vida de pacientes con HP en España había estado basada fundamentalmente en el uso del SF-36. Por su parte, el CAMPHOR fue específicamente diseñado para la evaluación de la calidad de vida y la calidad de vida relacionada con la salud de personas con HP [21]. El segundo estudio estuvo destinado a alcanzar un mayor entendimiento sobre la naturaleza de la sintomatología de depresión y ansiedad en esta población. Hasta el momento, la potencial relevancia de factores individuales y situacionales no había sido tomada en cuenta por investigaciones en esta área, a pesar de la relevancia de este tipo de factores para el estado emocional. Por último, el tercer estudio estuvo destinado a ofrecer una

visión de la calidad de vida de los pacientes desde la perspectiva del modelo de calidad de vida basado en las necesidades [22,23]. Según este modelo, la calidad de vida depende de la capacidad de los individuos de satisfacer sus necesidades. Hasta el momento, la investigación sobre calidad de vida en esta área había estado basada fundamentalmente en el estudio de la calidad de vida relacionada con la salud; la mayoría de los estudios habían estado centrados en la relevancia de diferentes indicadores del estado de salud (e.g. síntomas, discapacidad funcional) para la calidad de vida, mientras que la atención a los factores psicosociales había sido pasada por alto. Sin embargo, tomando en cuenta que la HAP y la HPTEC son dos enfermedades de carácter progresivo, parecía relevante establecer la relevancia de los factores psicosociales en la calidad de vida y en el proceso de adaptación a la enfermedad.

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Chapter 2

Adaptation and validation of the Cambridge Pulmonary Hypertension Outcome Review (CAMPHOR) for use in Spain

This chapter is based on:

Aguirre-Camacho A, Stepanous J, Blanco-Donoso LM, Moreno-Jiménez B, Wilburn J, González-Saiz L, McKenna SP. Adaptation and Validation of the Cambridge Pulmonary Hypertension Outcome Review (CAMPHOR) for Use in Spain. Revista espanola de cardiologia (English ed.). 2016 Dec 15.

2.1. Abstract

Introduction and objectives: The Cambridge Pulmonary Hypertension Outcome Review (CAMPHOR) is a patient-reported outcome measure of health-related quality of life and quality of life specific to individuals with pulmonary hypertension (PH). Within this area, the CAMPHOR has demonstrated superiority over other instruments assessing similar domains. The objective of the present study is to adapt and validate the Spanish version of the CAMPHOR.

Methods: The adaptation consisted of three stages: translation from English to Spanish using bilingual and lay panels, cognitive debriefing interviews with patients, and assessment of psychometric properties by means of a postal validation survey.

Results: The translation panels produced a version of the CAMPHOR that was considered suitable to be used by Spanish PH patients. The relevance, comprehensiveness, and acceptability of this version were confirmed in interviews with PH patients. Finally, the validation survey (n = 70) revealed that the three CAMPHOR scales (Symptoms, Activities, and Quality of Life) showed strong psychometric properties. The internal consistency (Cronbach's alpha) coefficients of the scales reached above 0.89, and the test-retest reliability above 0.87. The convergent and known group validity of the CAMPHOR scales were also demonstrated.

Conclusions: The Spanish version of the CAMPHOR is a valid and reliable instrument for the assessment of health-related quality of life and quality of life in Spanish PH patients. Therefore, it is recommended for use in future research and clinical practice in the Spanish population of PH patients.

Keywords: CAMPHOR, pulmonary hypertension, quality of life

2.2. Introduction

Pulmonary hypertension (PH) is a disorder of the pulmonary vasculature characterized by increased pulmonary vascular resistance. Commonly reported symptoms include shortness of breath, reduced exercise capacity, chest pain, oedema, and syncope [1]. The current clinical classification of PH consists of five groups characterized by different pathological features [2]:

1. Pulmonary Arterial Hypertension (PAH)
2. Pulmonary hypertension due to left heart disease
3. Pulmonary hypertension due to lung diseases and/or hipoxia
4. Chronic thromboembolic pulmonary hypertension (CTEPH)
5. Pulmonary hypertension with unclear multifactorial mechanisms

PH is an incurable disorder; only eligible patients with CTEPH can be offered a cure by means of pulmonary thromboendarterectomy [3]. PH leads to right ventricular failure and may cause premature death if untreated [4].

The face of PH has changed dramatically since disease-specific medications were introduced two decades ago. Before then, the median life expectancy after diagnosis was only 2.8 years and treatment was mostly directed at palliating symptoms [5]. Subsequent pharmacological advances have continued to expand the arsenal of drugs designed specifically to treat PH and have made it possible to target multiple pathophysiological mechanisms implicated in the progression of the disease. Current treatment approaches have shown success in improving haemodynamic measures, exercise capacity, and survival times [6].

Despite improvements in treatment and clinical management [1], PH continues to be an illness with the potential to have a major impact on a person's life. In addition

to the physical and functional impact produced by the illness, individuals can be burdened by treatment. Some of these involve complex methods of administration and can sometimes result in complications and adverse side effects. These for example include catheter infections resulting from intravenous administration [7], together with skin rashes and site pain resulting from subcutaneous infusion [8]. Altogether, these aspects may further impact individuals' emotional wellbeing and impose constraints on their social and family life. Several endpoints have been used traditionally in the assessment of clinical status in PH, including haemodynamic parameters, exercise capacity, and biological markers. However, such endpoints provide limited information on how patients actually feel [9]. Patient-reported outcome (PRO) measures, where carefully designed, can assess both the impact of disease and the effectiveness of its treatment as perceived by patients. Further, PRO measures may provide relevant information about health status that may be unnoticed by clinicians [10].

The Cambridge Pulmonary Hypertension Outcome Review (CAMPHOR) was the first PRO measure specifically designed to evaluate health-related quality of life (HRQL) and quality of life (QoL) in individuals with PH [11]. Although related, these two constructs are based on two different theoretical models as approached by the CAMPHOR. That is, HRQL taps into the presence of symptoms (physical and psychological) and functional limitations, and therefore constitutes a direct reflection of health status. Alternatively, the operationalization of QoL is based on the needs-based model, which proposes that life gains quality when a person is able to satisfy his/her needs. According to the needs-based model, symptoms and functional disability are not direct indicators of QoL, but two factors that may influence QoL to the extent that they may interfere with need-fulfillment. Similarly, many other non-health factors (e.g.

finances, employment, social support) may also interfere with or promote need-fulfilment and influence QoL [12,13].

The development of the CAMPHOR constituted an important advance in QoL research in PH. Prior to this, outcomes for patients with PH had relied on generic instruments (e.g. Short-Form 36 (SF-36), Nottingham Health Profile (NHP)) and other instruments designed for related conditions (e.g. Minnesota Living with Heart Failure Questionnaire (MLHFQ), Chronic Heart Failure Questionnaire (CHQ))[10]. However, these instruments have shown poor responsiveness to change when used with PH patients, as they do not inquire about many aspects important to PH patients [10]. In contrast, the CAMPHOR was created from in-depth interviews with PH patients to ensure that its content covered the full scope of the impact of the disease and thus was relevant to the actual experience of patients. Moreover, the CAMPHOR scales were developed using Rasch analysis, an approach that has largely replaced the use of classical test theory in instrument development [11]. The use of Rasch analysis ensures that the resulting scales are unidimensional and measure at the interval- rather than ordinal-level. This attribute is particularly relevant to clinical trials as it increases responsiveness and reduces the sample sizes required [14]. Even though more comparative studies would be beneficial, the CAMPHOR has demonstrated superior psychometric properties to other instruments that have been used to assess outcome in PH such as the SF-36 [15,16] and the NHP [11]. The CAMPHOR was developed in the United Kingdom and has been adapted and validated for use in Canada (both in French and English) [17], United States [16], Australia/New Zealand [18], Germany/Switzerland/Austria [19], Sweden [20], the Netherlands [21], and Portugal [22].

The present study describes the process of adaptation of the CAMPHOR for use in Spain. According to data from the Spanish Registry of Pulmonary Arterial Hypertension, the estimated prevalence of PAH in Spain is 16 cases per million adult inhabitants, while that of CTEPH is 3.2 cases. The data also show that patients are being identified at an earlier disease stage, which along with improved PH therapy has been associated with increased survival [23]. These positive trends have permitted to expand therapeutic goals, and issues pertaining the QoL of patients have become increasingly significant. However, the assessment of the QoL of Spanish PH patients has been limited by the use of PH-non-specific QoL instruments.

2.3. Methods

2.3.1. Procedure

This study was part of two independent research projects approved by the Ethics Committees of the Autonomous University of Madrid and the October 12th Hospital, both in Madrid, Spain. The process of adaptation of the Spanish version of the CAMPHOR involved three stages; translation from English to Spanish, cognitive debriefing interviews with Spanish-speaking PH patients, and a postal validation survey.

Translation from English to Spanish

The dual panel methodology [24] was employed for the translation stage. A bilingual panel of native Spanish speakers fluent in English without experience of PH was conducted to provide the initial translation. The translation was then refined by a lay panel of monolingual Spanish individuals of average to lower-than-average educational level, who were representative of the target population. The purpose of the

lay panel was to ensure that common everyday language and idioms were included in the translated measure.

Cognitive debriefing interviews

Twenty-three patients with PH (male = 39%, mean age = 52.3 years, SD = 14.7) were recruited to take part in one-to-one cognitive debriefing interviews. The objective of these interviews was to test whether the Spanish version produced by the translation panels was comprehensive, easy to understand, and to identify any problems experienced by respondents. Interviewees were first asked to complete the CAMPHOR in the presence of an investigator who took note of any hesitation or difficulty. Following this, respondents were asked about the comprehensibility of the items, whether the wording sounded natural in Spanish, and whether they thought there were any relevant aspects of living with PH that had not been included in the questionnaire.

Postal validation survey

A postal survey was conducted to test the psychometric properties of the Spanish CAMPHOR. Data were collected from a sample of 70 patients (male = 20%, mean age = 49.2 years, SD = 13.30), which included eight of the 23 patients who took part in the cognitive debriefing interviews. Participants completed a questionnaire package on two occasions, approximately two weeks apart. An interval of two weeks was selected because the disease status is unlikely to change during this time and the participants' responses are unlikely to be influenced by recall bias. In addition to the Spanish version of the CAMPHOR, the package included a demographic questionnaire and the Spanish version of the Nottingham Health Profile [25], which was used as a comparator scale.

Most participants taking part in the postal validation survey were recruited from the Spanish National Association of Pulmonary Hypertension; a smaller subsample was

also recruited from the October 12th Hospital. Altogether, the sample represented most regions of Spain. Patients were eligible to participate if they were 18 years of age or older, were native Spanish speakers, and had a confirmed diagnosis of PH according to the World Health Organization (WHO) Diagnostic Classification. Several exclusion criteria were also set: having undergone pulmonary thromboendarterectomy and an inability to understand what was required from participation or give informed consent.

2.3.2. Statistical analyses

Descriptive statistics

The distributional properties of scores on the measures were explored by calculating medians, interquartile ranges (IQR), means (standard deviations), and floor/ceiling effects (i.e. % of patients scoring the minimum and maximum possible scores, respectively).

Internal consistency

The Cronbach's alpha coefficient was used to assess the internal consistency of the CAMPHOR scales. This measures the extent to which the items of a scale are inter-related. Alpha values above 0.70 indicate that the items work together to form a scale [26].

Test-retest reliability

Spearman's rank correlation coefficient was used to assess the test-retest reliability of the CAMPHOR scales. The test-retest reliability of a measure is an estimate of the consistency of scores over time, assuming no change in condition has taken place. A correlation above 0.85 indicates that the instrument produces low random measurement error [27].

Convergent validity

Convergent validity can be determined by examining the level of association between scores on the scale of interest and those from a measure that assesses the same or related constructs. For the present investigation, CAMPHOR scores were correlated with NHP section scores using Spearman's rank correlation coefficients.

Known group validity

Known group validity assesses whether a measure is able to distinguish between groups of respondents that differ according to some known factor thought to influence their scores on the measure. The factors used for the present investigation were perceived general health (categorized as either "Very good"/"Good" or "Fair"/"Poor"), perceived disease severity (categorized as either "Mild"/"Moderate" or "Severe"/"Very severe"), and WHO classification (functional classes I to IV). Due to the relatively small sample sizes participants in functional classes III and IV were grouped together. Non-parametric tests for independent samples (i.e. Mann-Whitney U Test for two groups or Kruskal-Wallis One-Way Analysis of Variance for three or more groups) were employed for these analyses.

2.3.3. Measures

Cambridge pulmonary hypertension outcome review

The CAMPHOR [11] consists of three scales: Symptoms, Activities and QoL. The Symptoms scale assesses the presence of symptoms characteristic of PH. It contains 25 items with a dichotomous response format ("Yes"/"No"), allowing scores to range from 0 to 25. The Activities scale contains 15 items and evaluates whether participants can perform a series of activities of daily life. Each item has three response options: "Able to do on own without difficulty", "Able to do on own with difficulty", and

"Unable to do on own". Scores on this scale can range from 0 to 30. These two scales, Symptoms and Activities, assess HRQL. The QoL scale has 25 items (answered "True" or "Not True") with scores ranging from 0 to 25, and assesses whether individuals are able to fulfill needs that may be affected by PH. Higher scores on the Symptoms, Activities and QoL scales are indicative of increased symptomatology, poorer physical functioning, and lack of ability to satisfy needs, respectively. Therefore, higher scores on the three CAMPHOR scales correspond to lower levels of HRQL and QoL.

Nottingham Health Profile

The NHP [28] is a generic self-report measure of perceived health status. It contains 38 items assessing health problems across six different sections; energy level, pain, emotional reactions, sleep quality, social isolation, and physical mobility. A dichotomous response format ("Yes"/"No") is employed, and responses are converted to a percentage to allow section scores to range from 0 to 100, with higher scores indicating worse health status. In addition, embedded within the NHP is the index of Distress (NHP-D), a measure of illness-related distress. The NHP-D has 24 items and produces scores ranging from 0 to 24.

2.4. Results

Translation from English to Spanish

The bilingual panel consisted of three females and two males, aged between 27 and 39 years. Even though they were able to provide translations for the instructions and items in the measure, several options for some items were forwarded to the lay panel for them to make a choice. Some changes were made by the bilingual panel to make the measure more appropriate for the Spanish population, such as instructing the patient to "cross" the answer box instead of "tick". Colloquial English phrases were translated in a

way that ensured conceptual equivalence in Spanish. Further, the panel opted for masculine forms in relevant words instead of dual gender forms, as this is the correct grammatical usage in Spanish.

The lay panel included two females and four males, aged between 19 and 59 years. Members of the panel were able to select the most appropriate options out of those proposed by the bilingual panel. The panel agreed with the bilingual panel members with using masculine forms throughout the measure. Minor changes were made to ensure that the translations were clear and comprehensible to the Spanish population. For the QoL scale, the lay panel decided to change the response options proposed by the bilingual panel (from "Cierto"/"No Cierto" to "Verdadero"/"Falso" – both meaning "True"/"False") as it was thought that the latter was more commonly used in Spain.

Cognitive debriefing interviews

Overall, the PH patients interviewed considered the Spanish version of the CAMPHOR to be relevant, comprehensive, and easy to understand. The majority of the translation sounded natural in Spanish. As the result of the interviews, two items were changed. For item 21 on the Symptoms scale, the word "raramente" was changed to "muy pocas veces" – both mean "rarely" but the latter is more commonly used. Similarly, for item 15 on the QoL scale, "largas distancias" (large distances) was changed to "lejos de mi casa" (away from my house), as the interviewees felt that the latter was easier to understand. This updated questionnaire was used in the postal survey. Table 1 contains a sample of items from the Spanish and UK versions of the CAMPHOR.

Table 1

Sample of items from the Spanish and UK versions of the Cambridge Pulmonary Hypertension Outcome Review (CAMPHOR)

Escala de Síntomas (25 ítems)	*Symptoms Scale* (25 items)
Tengo poca energía	My stamina levels are low
Me canso con rapidez	I get tired very quickly
Me siento muy débil	I feel very weak
Cuando camino me quedo sin aliento	When I walk I get out of breath
Me quedo sin aliento al subir un escalón	I get breathless going up one step
Incluso sin hacer nada me quedo sin aliento	I get breathless without doing anything
Me siento muy decaído	I get very down
He olvidado lo que significa disfrutar	I've forgotten what it's like to enjoy myself
A menudo me siento angustiado	I often feel anxious
Escala de Actividades (15 ítems)	*Activities Scale* (15 items)
Vestirme	Get dressed
Caminar distancias cortas en terreno llano	Walk short distances on level ground
Estar de pie durante un corto periodo de tiempo	Stand for a short time
Levantar objetos pesados	Lift heavy items
Escala de Calidad de Vida (25 ítems)	*Quality of Life Scale* (25 items)
Mi enfermedad condiciona mis relaciones personales	My condition puts a strain on my close relationships
No puedo hacer cosas de manera improvisada	I can't do things on the spur of the moment
Siento que mi cuerpo no me responde	It feels like my body has let me down
Me siento como una carga para los demás	I feel as if I am a burden to people
No soy capaz de participar en actividades con la familia y los amigos	I'm unable to join in activities with my family and friends

Postal validation survey

Detailed demographic and clinical information about the participants is shown in Table 2.

Table 2
Demographic and clinical characteristics of the postal survey participants (n = 70)

Age		
Mean (SD)	49.2	(13.3)
Median (IQR)	48	(41.0 – 60.0)
Gender	*n*	*%*
Male	14	20.0
Female	56	80.0
Marital Status		
Single	13	18.6
Married/Common law	46	65.7
Divorced	8	11.4
Widowed	3	4.3
Work Status		
Full-time	6	8.6
Part-time	1	1.4
Homemaker	14	20.0
Retired	12	17.1
Long-term sick leave	28	40.0
Unemployed	5	7.1
Student	4	5.7
Perceived general health		
Poor	11	15.7
Fair	33	47.1
Good	23	32.9
Very good	3	4.3
Perceived disease severity		
Mild	9	12.9
Moderate	43	61.4
Quite severe	16	22.9
Very severe	2	2.9
Use of oxygen		
No	44	62.9
Yes	26	37.1
WHO functional class		
I	14	24.1
II	30	51.7
III	12	20.7
IV	2	3.4

IQR= Interquartile range; SD = Standard deviation; WHO = World Health Organization

High floor effects (participants scoring the minimum) were observed in the NHP section scores, suggesting that generic measures are not suitable for assessing HRQL and QoL in individuals with PH. Further information regarding the descriptive statistics of the questionnaires scores is shown in Table 3.

Table 3
Descriptive statistics of the CAMPHOR scores

	n	*Median (IQR)*	*Mean (SD)*	*Min - Max*	*% scoring minimum*	*% scoring maximum*
First administration						
CAMPHOR						
Symptoms	63	6.0 (3.0 – 11.0)	6.7 (5.5)	0.0 – 25.0	11.1	1.6
Activities	68	6.5 (4.0 – 11.0)	7.9 (5.4)	0.0 – 30.0	4.4	0.0
QoL	60	5.5 (2.0 – 10.8)	6.5 (5.7)	0.0 – 25.0	13.3	0.0
NHP						
Energy level	67	0.0 (0.0 – 33.3)	24.4 (34.6)	0.0 – 100.0	59.7	10.4
Pain	66	0.0 (0.0 – 12.5)	8.1 (19.4)	0.0 – 100.0	72.7	1.5
Emotional reactions	65	11.1 (0.0 – 33.3)	17.9 (20.3)	0.0 – 100.0	43.1	0.0
Sleep	66	20.0 (0.0 – 40.0)	24.8 (30.0)	0.0 – 100.0	45.5	4.5
Social isolation	69	0.0 (0.0 – 20.0)	10.4 (19.6)	0.0 – 100.0	71.0	0.0
Physical mobility	66	25.0 (12.5 – 50.0)	26.3 (22.9)	0.0 – 100.0	21.4	0.0
NHP-D	63	3.0 (0.0 – 6.0)	3.5 (3.9)	0.0 – 24.0	28.6	0.0
Second administration						
CAMPHOR						
Symptoms	54	5.0 (1.0 – 10.0)	5.8 (5.0)	0.0 – 25.0	14.8	1.9
Activities	65	7.0 (4.0 – 10.0)	7.5 (4.7)	0.0 – 30.0	3.1	0.0
QoL	61	3.0 (1.0 – 10.0)	5.6 (5.4)	0.0 – 25.0	14.8	0.0
NHP						
Energy level	66	0.0 (0.0 – 33.3)	22.2 (35.2)	0.0 – 100.0	65.2	12.1
Pain	62	0.0 (0.0 – 3.1)	8.9 (21.3)	0.0 – 100.0	75.8	1.6
Emotional reactions	65	11.1 (0.0 – 27.8)	17.1 (23.2)	0.0 – 100.0	47.7	1.5
Sleep	64	0.0 (0.0 – 40.0)	22.5 (28.8)	0.0 – 100.0	51.6	1.6
Social isolation	64	0.0 (0.0 – 20.0)	10.3 (21.7)	0.0 – 100.0	73.4	1.6
Physical mobility	65	25.0 (12.5 – 37.5)	24.0 (20.3)	0.0 – 100.0	21.5	0.0
NHP-D	63	2.0 (0.0 – 6.0)	3.3 (4.0)	0.0 – 24.0	34.9	0.0

CAMPHOR = Cambridge Pulmonary Hypertension Outcome Review; IQR = Interquartile range; NHP = Nottingham Health Profile; NHP-D = Nottingham Health Profile index of Distress; QoL = Quality of Life; SD = Standard deviation

Internal consistency and test-retest reliability

Cronbach's alpha coefficients were above 0.80 for the three CAMPHOR scales, indicating high levels of internal consistency. The three CAMPHOR scales showed excellent test-retest reliability (above 0.85), demonstrating low levels of random measurement error (Table 4).

Table 4
Cronbach's alpha and test-retest reliability correlation coefficients of the CAMPHOR scales

	Internal consistency	*Test-retest reliability*
Symptoms	0.90	0.91*
Activities	0.92	0.88*
QoL	0.91	0.87*

*$p < 0.001$
CAMPHOR = Cambridge Pulmonary Hypertension Outcome Review; QoL = Quality of Life

Convergent validity

Table 5 shows the correlations between the CAMPHOR scores and those on the NHP sections at Time 1. The CAMPHOR Symptoms scale correlated strongly with the energy level and physical mobility sections of the NHP, showing the importance of these symptoms in influencing the QoL of individuals with PH. As expected, the CAMPHOR Activities scale correlated most strongly with the NHP physical mobility section. It is noteworthy that QoL scores were associated with both the physical and psychological aspects of PH.

Table 5

Correlation coefficients between CAMPHOR and NHP scores at Time 1

	Symptoms	*Activities*	*QoL*
NHP			
Energy level	0.79**	0.67**	0.61**
Pain	0.36**	0.36**	0.38**
Emotional reactions	0.55**	0.50**	0.67**
Sleep scale	0.39**	0.34**	0.27*
Social isolation	0.30*	0.28*	0.47**
Physical mobility	0.82**	0.86**	0.58**
NHP-D	0.69**	0.63**	0.74**

**$p < 0.01$, *$p < 0.05$

CAMPHOR = Cambridge Pulmonary Hypertension Outcome Review; NHP = Nottingham Health Profile; NHP-D = Nottingham Health Profile index of Distress; QoL = Quality of Life

Known group validity

Figures 1 to 3 show the results of the known group validity analyses. Participants who rated their health as "Very good"/"Good" reported significantly lower levels of symptoms and disability as well as higher levels of QoL compared to participants who rated their health as "Fair"/"Poor" (Figure 1). Similar differences were found between participants who perceived their PH to be "Mild"/"Moderate" versus those who perceived their PH as "Severe"/"Very severe" (Figure 2). In terms of the WHO classification, participants in functional classes III/IV showed the highest scores in all CAMPHOR scales, indicating more symptoms and disability, and lower QoL (Figure 3).

Figure 1
Median CAMPHOR scale scores by perceived general health

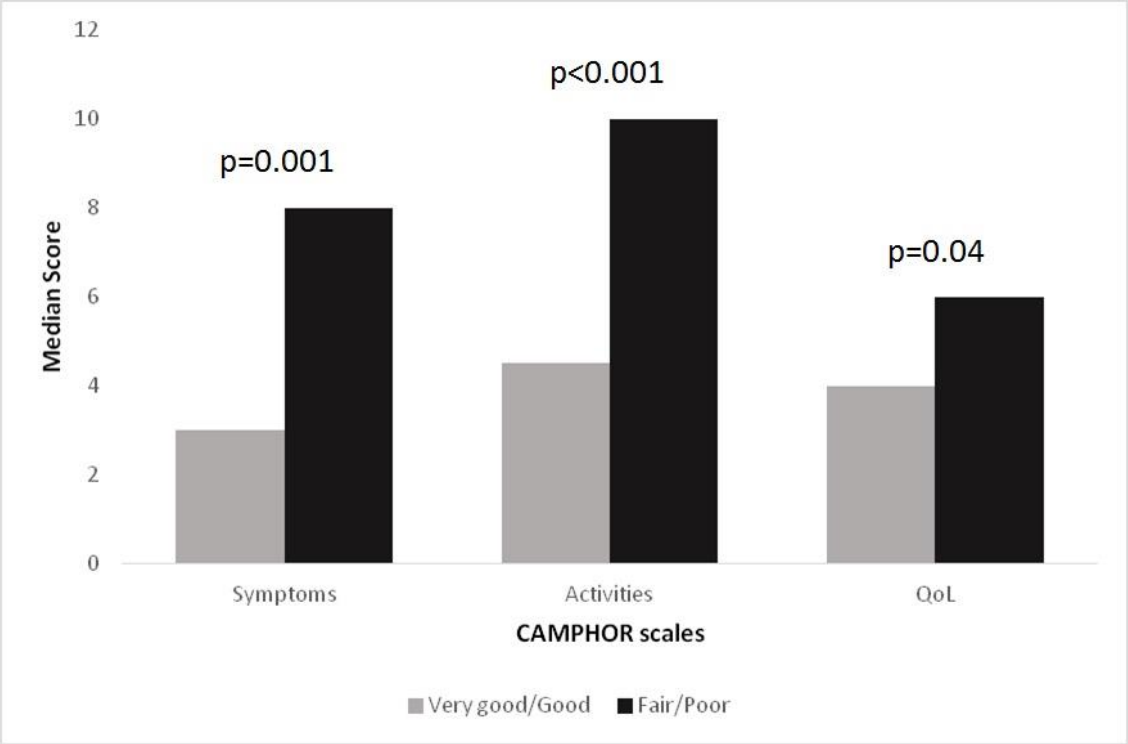
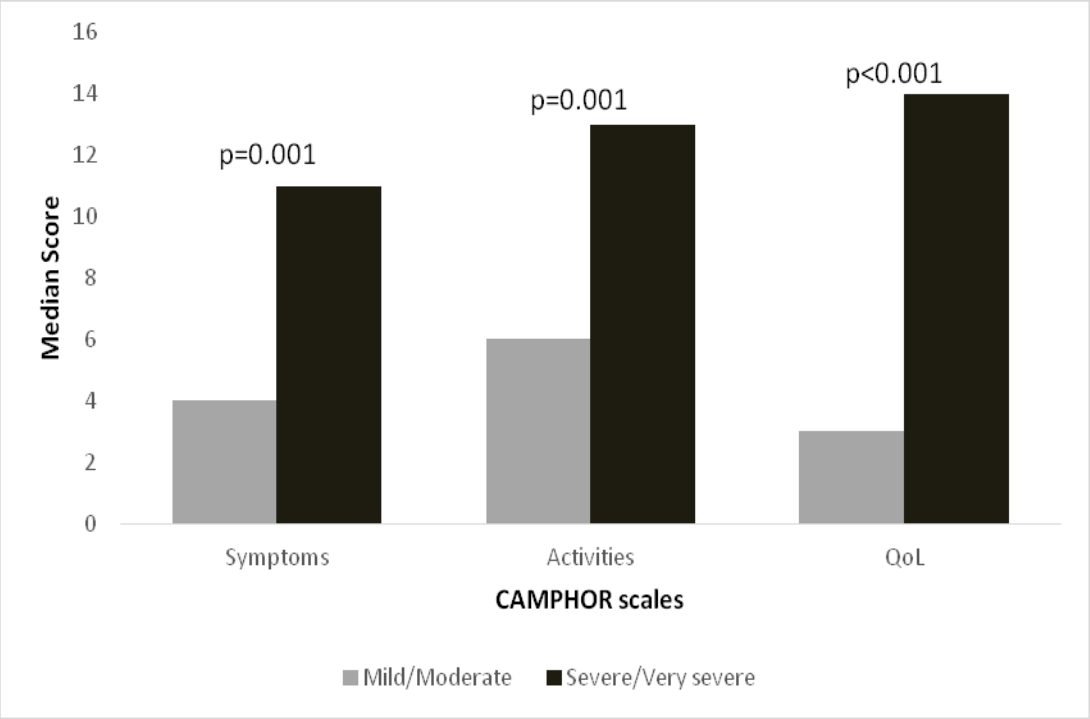
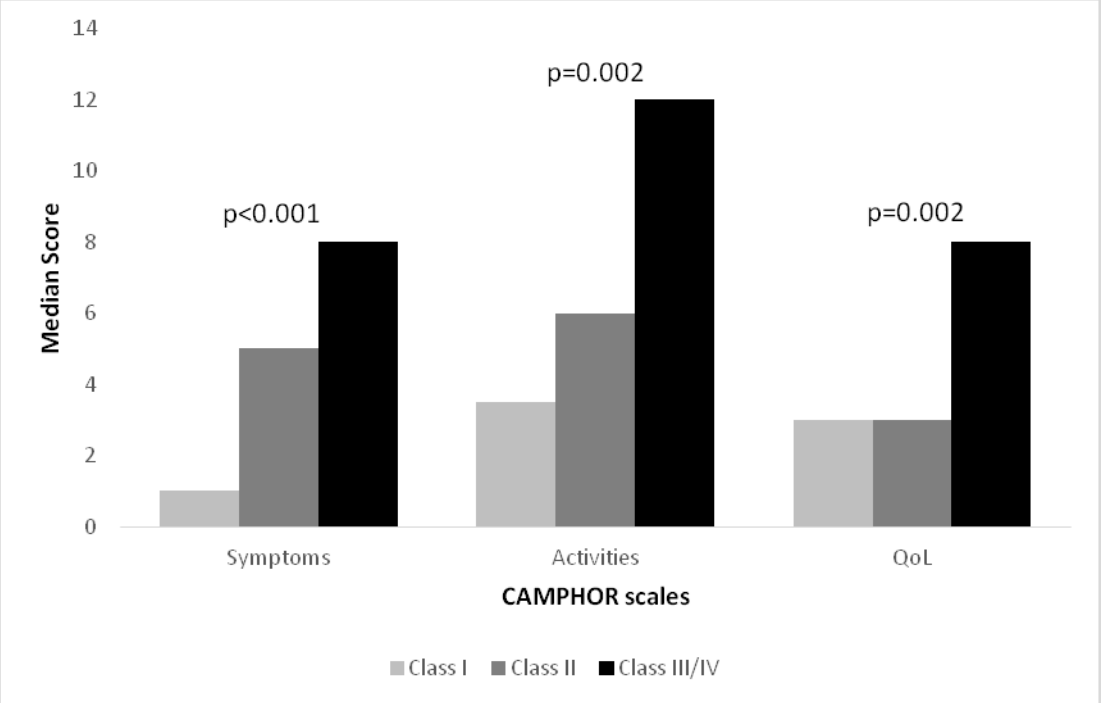


Figure 2
Median CAMPHOR scales scores by perceived disease severity



CAMPHOR = Cambridge Pulmonary Hypertension Outcome Review; QoL = Quality of Life

Figure 3
Median CAMPHOR scales scores by WHO class



CAMPHOR = Cambridge Pulmonary Hypertension Outcome Review; QoL = Quality of Life

2.5. Discussion

This study shows that the adaptation of the CAMPHOR for use in Spain was successful. The Spanish translation was well accepted by interviewees and worked well in the postal survey. The psychometric quality of the measure proved high in the validation study.

The availability of the Spanish CAMPHOR will likely have a positive impact on both research and clinical practice in the Spanish PH population. The CAMPHOR has been shown to be a useful tool in outcome evaluation and cost/benefit analysis, due to its good responsiveness to change in QoL status [29]. The measure should also facilitate communication and joint decision making in everyday clinical practice between patients and clinicians. It has been previously reported that some endpoints may not accurately capture the way patients actually feel [30], and treatment may not result in the same

level of benefit across patients. Therefore, the broad scope of aspects covered by the CAMPHOR may assist clinicians in the management and monitoring of patients.

The study presented here should be interpreted in light of some limitations. First, the sample of participants recruited for this study presented with relatively mild disease, as 75% of them were in WHO functional classes I and II. Secondly, most participants were members of a patient association and, consequently, they may differ from non-members. Further studies are required to explore the true impact of PH on Spanish patients using the CAMPHOR and relevant clinical outcomes.

2.6. Conclusions

The results presented in this study attest to the validity and reliability of the Spanish CAMPHOR. Given that the good psychometric properties found here match those obtained in other adaptation studies, it is likely that the measure will prove valuable in clinical practice and research.

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Chapter 3

Personal and situational factors as determinants of depression and anxiety in patients with pulmonary hypertension

3.1. Abstract

Objective: Previous studies have failed to explain individual differences in emotional wellbeing in pulmonary hypertension (PH) patients based on illness-related factors alone. Yet, the potential relevance of individual and situational factors has been largely overlooked. This study aimed to gain insight into the nature of depression and anxiety among PH patients by examining the impact of life satisfaction and optimism while controlling illness-related factors.

Methods: Sixty-four patients provided demographic and clinical information, and completed measures of impairment, functional disability, depression, anxiety, life satisfaction, optimism, and quality of life.

Results: Logistic regression analyses revealed that the presence of clinically significant symptoms of depression and anxiety could only be accurately predicted in about 50% of cases, based on illness-related factors alone; however, life satisfaction and optimism improved prediction in the final models.

Conclusions: Individuals with higher levels of life satisfaction may have find refuge against the impact of PH in other life areas, whereas those with higher levels of optimism may have shown weaker perception of threat regarding PH. Interventions directed at increasing the emotional wellbeing of PH patients should take into consideration with wider personal and situational context of patients, as these may influence illness appraisals and attenuate or exacerbate the impact of PH on their emotional wellbeing.

3.2. Introduction

Pulmonary hypertension (PH) is a condition characterized by a progressive increase in pulmonary arterial pressure and vascular resistance, eventually leading to right ventricular failure. The current clinical classification of PH comprises five major groups of diseases with different etiology and pathological features [1]. PH is often associated with relatively common underlying diseases, such as left heart disease and chronic obstructive pulmonary disease. However, other types of PH are considered rare due to their extremely low prevalence, such as pulmonary arterial hypertension (PAH) (15 - 60 cases per million adult inhabitants) and chronic thromboembolic pulmonary hypertension (CTEPH) (3.2 cases per million adult inhabitants) [2,3]. Even though medical and pharmaceutical advances have greatly improved prognosis over the last two decades [4, 5], PAH and CTEPH continue to be associated with a reduced life expectancy.

Patients with PAH and CTEPH often share common experiences as the result of their conditions. They may initially seek medical attention due to nonspecific symptoms, such as shortness of breath, fatigue, chest pain, and reduced exercise capacity. At first these symptoms may be mistaken for those of more common disorders, and patients may have to consult several specialists and medical centers before obtaining the correct diagnosis [2,4]. The news about the diagnosis may be received with intense fear and confusion, given the potentially lethal nature and rarity of these two conditions. In addition, many patients may report feeling alienated due to the lack of social awareness about PAH and CTEPH, even among health care professionals and their inner circle of family and friends. PAH and CTEPH can also exert a profound impact on the daily lives of patients [7]. The associated symptoms can be quite

debilitating and result in high levels of functional disability. Treatment itself can be extremely burdensome due to its complexity; some patients must permanently wear devices that administer their medication subcutaneously or intravenously, and strong adverse side effects (e.g. diarrhoea and headache) and severe complications (e.g. catheter infections resulting from intravenous drug infusion and site pain from subcutaneous infusion) may also be experienced [8]. Poor health may confine individuals to their homes, limiting their opportunities for leisure and travel and preventing them from keeping their jobs, which may result in added financial strain [9]. Further, the disease may threaten personal roles (e.g. provider, worker) and interfere with the attainment of vital life goals (e.g. childbearing) [10]. Furthermore, patients may also show difficulty in dealing with the uncertainties related to living with a rare, unpredictable, and highly threatening illness.

Altogether, the circumstances surrounding the lives of patients with PAH and CTEPH can easily deplete their coping resources and increase their risk of developing mental health problems. A study of 164 patients with PAH found that 35% of them suffered from a psychiatric disorder [11], including major depressive disorder (15.9%), panic disorder (10.4%), alcohol abuse/dependence (5.5%), and eating disorders (4.3%). Similarly, other studies have found rates of depressive and anxiety symptomatology, ranging from 7.5% to 55% and from 19% to 48%, respectively [12-15]. However, research devoted to identifying potential determinants of psychopathology in PH patients has been scarce and limited in scope; even though several descriptive accounts have pointed to implication of different types of factors, most studies in his area have exclusively focused on the role of disease severity in explaining depression and anxiety. Altogether, these studies have consistently shown that depressive and anxiety symptoms are associated with higher levels of disease severity across several indicators, including

functional class [11], the six minute walking test [14], and self-report measures of health status [16], dyspnea [17], and *health-related quality of life* (HRQL; i.e. the aspects of QoL specifically related to health) [15]. However, the findings of these studies also attest to the insufficiency of disease severity in explaining psychopathology; after all, not all patients with severe disease develop emotional problems, whereas some patients with mild disease do develop them [11].

Individual differences in emotional wellbeing among patients may be partly explained by differences in the way they appraise their illness vis-à-vis general appraisals of present and expected life circumstances. In fact, one of the central tenets in the field of psychology holds that the way people appraise internal and external events constitutes an important determinant of their emotional reactions; and a related principle holds that appraisals do not constitute faithful reflections of the appraised events, but dynamic processes that are influenced by personal and situational factors [18]. Accordingly, it is possible that illness appraisals and their impact on patients' emotional wellbeing are influenced by the extent to which patients show satisfaction with their current state of affairs. That is, in some cases patients may appraise their life circumstances as offering a refuge against the illness' impact on their emotional wellbeing, while the opposite may be true in cases where patients' lives may be riddled with difficulties. By the same logic, the extent to which patients hold positive or negative expectations about their future lives may also influence their illness appraisals and contribute to attenuate or exacerbate their emotional distress. Therefore, even though in some cases the severity of the disease may in itself contribute to the appearance of clinically significant symptoms of depression and anxiety, in other cases the presence of these may be better explained by also taking into consideration patients' levels of life satisfaction and optimism.

3.2.1. The present study

The primary objective of the present study was to assess the potential relevance of patients' life satisfaction and optimism in explaining the presence of clinically significant symptoms of depression and anxiety. Life satisfaction has been defined as a "global assessment of a person's life according to [a person's] chosen criteria" [19], whereas optimism has been defined as a variable that "reflects the extent to which people hold generalized favorable expectancies for their future" [20]. The level of life satisfaction has been proposed to derive from different sources, including health but also social relationships, occupation, sense of meaning, personal growth, and leisure. Optimism has been conceptualized as trait-like, but it has also been proposed to be influenced by early childhood experiences. Accordingly, life satisfaction and optimism can be seen as two variables that in a general sense provide a context on which the impact of PAH/CTEPH can be placed, and from which individual differences may be explained. However, the potential relevance of individual factors has been largely overlooked by this area of research. Based on these assumptions, it was hypothesized that 1) higher levels of impairment and functional disability, and lower levels of life satisfaction and optimism would predict the presence of clinically significant symptoms of depression and 2) anxiety.

A secondary objective was to examine the extent to which the presence of clinically significant symptoms of depression and anxiety may constitute an extra burden to the QoL of patients. Accordingly, it was hypothesized that 3) the presence of clinically significant symptoms of depression would account for a significant amount of variance in QoL, above and beyond the level of impairment and functional disability, and 4) the presence of clinically significant symptoms of anxiety would account for a

significant amount of variance in QoL, above and beyond the level of impairment and functional disability.

3.3. Methods

3.3.1. Participants and procedure

This study was approved by the Ethics Committee of the Autonomous University of Madrid, Spain. Inclusion criteria comprised patients of 18 years of age or older with a confirmed diagnosis of PAH or CTEPH according to the World Health Organization Diagnostic Classification. Having undergone pulmonary thromboendarterectomy and an inability to understand what was required from participation or give informed consent were set as exclusion criteria.

The study was introduced to potential participants at workshops held by the Spanish National Association of Pulmonary Hypertension (ANHP, Spanish acronym for *Asociación Nacional de Hipertensión Pulmonar*). The ANHP members who showed initial interest in participating were mailed the informed consent form and a questionnaire package, along with a prepaid return envelope. The questionnaire package included questions about the demographic and clinical characteristics of patients, as well as measures of impairment, functional disability, QoL, depressive and anxiety symptomatology, life satisfaction, and optimism.

3.3.2. Measures

The *Cambridge Pulmonary Hypertension Outcome Review* (CAMPHOR) [21] is divided in three scales: *symptoms*, *activities*, and *QoL*. The symptoms scale comprises 25 items answered using a dichotomous format (yes/no), leading to a score ranging from 0 to 25, and assesses the presence of PH symptoms. The activities scale evaluates the level of functional disability and results in a score ranging from 0 to 30. It contains

15 items asking patients to indicate whether they can perform a series of daily activities using three response options: "able to do on own *without* difficulty", "able to do on own *with* difficulty", and "unable to do on own". The QoL scale contains 25 items and it was developed following the QoL needs-based approach, which asserts that life gains its quality when individuals are able to satisfy their needs. Responses to the QoL scale are provided using a dichotomous format ("true/false"), leading to a score ranging from 0 to 25. Lower scores on the three CAMPHOR scales are indicative of higher levels of wellbeing. The Spanish version of the CAMPHOR was used in this study [22], and the internal consistency (Cronbach's α) for the symptoms, activities, and QoL scales obtained from this sample was .91, .92, and .88, respectively.

The *Hospital Anxiety and Depression Scale* (HADS) [23] was created to detect the presence of emotional symptoms of anxiety and depression in individuals with physical illnesses. Somatic symptoms of anxiety and depression were excluded from the scale, as this type of symptoms (e.g. sleep disturbances, fatigue) may also result from physical illnesses and lead to a misleading assessment of anxiety and depression symptoms. The Spanish adaptation of the scale [24] consists of an anxiety and depression subscale, each comprising seven items and leading to a score ranging from 0 to 21. Responses are provided using a 4-point Likert scale ranging from 0 ('not at all') to 3 ('most of the time'). A score of 8 or above in both subscales was used in the present study to define clinically significant symptomatology [25]. The internal consistency (Cronbach's α) for the anxiety subscale obtained from this sample was .83 and that for the depression subscale was .80.

The *Satisfaction with Life Scale* (SWLS) [19] assesses the global judgements of satisfaction with one's life. The scale comprises 5 items, answered on a 7/point Likert scale ranging from 1 ("Strongly disagree") to 7 ("Strongly agree"), which results on a

global score from 5 to 35. The Spanish version of the SWLS was used in this study [26], and resulted in an internal consistency (Cronbach's α) coefficient of .81.

Life Orientation Test - Revised.

The LOT-R [20] is a 10-item measure of dispositional optimism and pessimism. It contains 10 items, four of which are filler items included to disguise the underlying purpose of the test. Items are rated using a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The Spanish version of the LOT-R was used in this study [27]. The internal consistency (Cronbach's α) for the LOT-R obtained in this study was .74.

3.3.3. Statistical analyses

Data analyses were carried out using SPSS version 21. Missing data reached 1.59% overall and 10.90% in individual variables. However, the results of Little's MCAR test indicated that the data were missing completely at random (χ^2 (14) = 14.56, p = .409). Missing values were interpolated using expectation maximization. Data were evaluated to ensure compliance with statistical assumptions. No linearity or homoscedasticity concerns emerged upon examination of scatterplots. Multicollinearity was not considered a threat. The assumptions of independence and normal distribution of errors were satisfied. Data were also screened in search for influential cases using cook's distance but none were detected.

The sample's demographic and medical characteristics were analyzed using frequency and descriptive statistics. Two hierarchical logistic regression analyses with backward selection were carried out to test whether life satisfaction and optimism would predict the presence of clinically significant levels of depression and anxiety after taking into account the level of PH symptoms and functional disability. Two hierarchical

multiple regression analysis were conducted to test whether clinically significant symptoms of depression and anxiety would be statistically significant predictors of QoL, after adjusting for the levels of PH symptoms and functional disability.

3.4. Results

Detailed demographic and medical information about the participants can be found in Table 1. The patients in the sample (N = 64) represented most regions of Spain and received PH medical care in multiple centers. They all were receiving PH treatment at the time of recruitment. A significant proportion of patients obtained scores in the HADS suggesting the presence of clinically significant symptoms of depression (21.9%) and anxiety (35.9%).

Table 1

Demographic and medical characteristics of patients (N = 64)

	Mean	*SD*
Age	49.81	13.73
Time since diagnosis (in months)	108.92	93.3
	N	*%*
Sex		
Female	53	82.8
Male	11	17.2
Marital status		
Married/Common law	44	68.8
Single	10	15.6
Divorced	8	12.5
Widowed	2	3.1
Work Status		
Long-term sick leave	25	39.1
Homemaker	14	21.9
Retired	9	14.1
Employed	7	11.0
Unemployed	5	7.8
Student	4	6.3
Diagnosis		
PAH		
Idiopathic	31	48.4
Congenital heart diseases	9	14.1
Heritable	6	9.4
Connective tissue disease	5	7.8
Drug and toxin induced	4	6.3
Portal hypertension	1	1.6
HIV infection	1	1.6
CTEPH	7	10.9
Oxygen use		
Yes	22	35.5
No	40	64.5

Note. PAH = pulmonary arterial hypertension; CTEPH = chronic thromboembolic pulmonary hypertension; WHO = World Health Organization, SD = standard deviation

Two hierarchical logistic regression analyses with backward selection were carried out to test whether life satisfaction and optimism would predict the presence of clinically significant levels of depression and anxiety after taking into account the levels of PH symptoms and functional disability. The first of these analyses (Table 2a) showed that the inclusion of impairment and functional disability in Block 1 produced a statistically significant model ($\chi^2 = 23.65$, $p < .001$) against a constant-only model. When life satisfaction and optimism were added to the model in Block 2, only life satisfaction remained in the model as a marginally significant predictor ($p = .55$) of presence of clinically significant symptoms of depression; yet, the second block resulted in a statistically significant improvement in model fit ($\chi^2 = 4.13$, $p = .042$). The overall success rate of classification at Block 1 was 82.80%, with 92% of individual with normal levels of depressive symptoms and 50% of those with clinically significant symptoms identified correctly; this was improved to 85.9% in Step 2, with 96% of individual with normal levels of depressive symptoms and 50% of those with clinically significant symptoms identified correctly.

The second analysis (Table 2b) showed that the inclusion of PH symptoms and functional disability in Block 1 resulted in a statistically significant model ($\chi^2 = 15.85$, $p < .001$) compared to a constant-only model. When life satisfaction and optimism were added in Block 2, only optimism remained as a statistically significant predictor of presence of clinically significant symptoms of anxiety; the second block resulted in a statistically significant improvement in model fit ($\chi^2 = 9.12$, $p = .003$). The overall success rate of classification at Block 1 was 75%, 85.40% of individuals with a normal level of anxiety symptoms and 56.50% with clinically significant symptoms of anxiety were correctly identified; the overall success rate of classification at Block 2 increased to 79.70%, with 90.20% of individuals with normal symptoms of anxiety and 60.90%

with clinically significant symptoms of anxiety identified correctly. These results offered support to hypotheses 1 and 2.

Table 2
Hierarchical logistic regression analyses with backward selection examining impairment, functional disability, life satisfaction, and optimism as predictors of clinically significant symptoms of a) depression and b) anxiety

a) Dependent variable: Presence of clinically significant symptoms of depression

	β	S.E.	Wald's χ^2	OR	95% CI for OR Lower-Upper
Block 1					
PH symptoms	.33	.13	6.95**	1.39	1.09 – 1.78
Functional disability	-.01	.11	.02	.99	.80 – 1.22
Block 2					
PH symptoms	.38	.15	6.71*	1.47	1.10 – 1.96
Functional disability	-.05	.12	.16	.96	.76 – 1.20
Life satisfaction	-.18	.10	3.70	.83	.70 – 1.00

b) Dependent variable: Presence of clinically significant symptoms of anxiety

	β	S.E.	Wald's χ^2	OR	95% CI for OR Lower-Upper
Block 1					
PH symptoms	.16	.09	3.07	1.18	.98 – 1.41
Functional disability	.05	.09	.34	1.06	.88 – 1.26
Block 2					
PH symptoms	.16	.10	2.32	1.17	.96 – 1.44
Functional disability	.09	.10	.77	1.09	.90 – 1.32
Optimism	-.20	.07	7.35**	.82	.71 – .95

Note. Statistical significance: $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$

Two hierarchical regression analyses were carried out to examine whether the presence of clinically significant symptoms of depression and anxiety would account for a significant amount of variance in QoL. In the first of these analyses (Figure 3a), PH symptoms and functional disability were entered in Block 1, initially accounting for 68.10% of the variance in QoL, (F (2, 61) = 65.01, $p < .001$); the addition of presence of clinically significant symptoms of depression in Step 2 was non-significant, which

failed to support hypothesis 3. The second analysis (Figure 3b) showed again that the inclusion of PH symptoms and functional disability in Block 1 accounted for 68.10% of the variance in QoL (F (2, 61) = 65.01, $p < .001$); the addition of presence of clinically significant symptoms of anxiety in Step 2 contributed another 4.8% in unique variance in QoL (F (1, 60) = 10.63, $p = .002$) above and beyond that accounted for by the variables entered in Step 1. These results offered support to hypothesis 4.

Table 3

Hierarchical multiple regression analyses examining PH symptoms, functional disability, and clinically significant symptoms of a) depression and b) anxiety as predictors of quality of life.

a)

	R^2	ΔR^2	*b*	*S.E.*	β	*t*
Block 1	.68***					
Impairment			.44	.12	.47	3.56**
Functional disability			.39	.13	.40	3.03**
Block 2	.69	.007				
Impairment			.38	.13	.40	2.83**
Functional disability			.39	.13	.40	3.07**
Depression			1.38	1.87	.10	1.16

b)

	R^2	ΔR^2	*b*	S.E.	β	*t*
Block 1	.68***					
Impairment			.44	.12	.47	3.56**
Functional disability			.39	.13	.40	3.03**
Block 2	.73***	.05**				
Impairment			.35	.12	.37	2.97**
Functional disability			.36	.12	.37	3.00**
Anxiety			2.86	.88	.25	3.26**

*Note. Statistical significance: * $p < .05$; ** $p < .01$; *** $p < .001$*

3.5. Discussion

The objective of the present study was to gain insight into the nature of depression and anxiety symptomatology among patients with PAH and CTEPH, by taking into consideration illness-related factors vis-à-vis general appraisals of present and expected life circumstances. Prior research in this area had mostly focused on the role of illness-related factors in fueling psychopathology, without much regard for personal and situational factors [11 – 17]. However, the results of this study suggest that disease severity alone is insufficient to explain the presence of clinically significant symptoms of depression and anxiety; rather, these may be driven in many cases by the interaction between illness-related factors and personal/situational factors.

This study has expanded on previous research by highlighting the relevance of personal and situational factors as potential determinants of clinically significant symptoms of depression and anxiety. The results of the hierarchical logistic regression analyses showed that based on the levels of PH symptoms and functional disability alone, the presence of clinically significant symptoms of depression and anxiety was only accurately predicted in 50% and 43% of cases, respectively. Whereas it was corroborated in post hoc tests that these cases corresponded to patients with medium to high levels of disease severity, the remaining cases that were not accurately predicted corresponded to patients with relatively mild levels of disease severity. Based on the cognitive model of psychopathology [28], these findings suggest that there is not a perfect correspondence between the *actual* level of disease severity and the *appraised* repercussions thereof, and that it is such appraised repercussions what may fuel the emergence of clinically significant depressive and anxiety symptomatology. This may explain the reason patients with considerably different levels of disease severity may still develop clinically significant symptoms of depression and anxiety.

Further, these results also suggest that patients' level of life satisfaction and optimism may have influenced their illness appraisals and thus the appearance of clinically significant symptoms of depression and anxiety. On one hand, life satisfaction did not improve the model's capacity of predicting the presence of clinically significant depressive symptoms above and beyond PH symptoms and functional disability; it seems that being dissatisfied with one's life was not as upsetting to patients as being ill. On the other hand however, showing high levels of life satisfaction did improve the model's capacity of predicting the absence of clinically significant depressive symptoms above and beyond impairment and functional disability. This finding suggests that feeling satisfied across other life areas may in some cases attenuate the illness' negative impact on the wellbeing of patients. In a more pronounced way, optimism improved the model's capacity of predicting the absence and presence of clinically significant symptoms of anxiety, above and beyond PH symptoms and functional disability. It seems that high levels of optimism may have contributed to decrease illness threat-appraisals, and thus the odds of showing clinically significant levels of anxiety; patients may have felt confident that events in the future may work out in a favourable way. On the other hand, having low levels of optimism may have in itself contributed to increase illness threat-appraisals irrespective of the actual level of disease severity, which seemed to increase the odds of showing clinically significant symptoms of anxiety.

This study also expands on previous research by showing that clinically significant depressive and anxiety symptomatology can have a unique impact on the QoL of patients with PAH and CTEPH. This suggests that patients with similar levels of PH symptoms and functional disability may show different levels of QoL as a function of whether they show clinically significant symptoms of depression and anxiety. Therefore, these findings highlight the necessity of addressing the emotional needs of

patients, as they constitute a pathway through which the QoL of patients could be improved, independently of health status. The specific ways in which the symptoms of depression and anxiety may have influenced QoL were not explored in this study. In general however, depressive and anxiety symptomatology may have exerted their impact on QoL by adding disability to the lives of patients [29]. The incapacity to feel pleasure, a symptom central to depression, may have for instance prevented patients from engaging in daily routines or leisure activities for reasons not necessarily related to the severity of their disease; patients may have also found it pointless to take on new hobbies or activities. In the case of anxiety symptoms, a focus on potential threats related to their illness may have diverted precious time and energy from important goals or activities, or from making life changes leading to better adjustment, again, for reasons not necessarily related to the severity of their disease. This finding further attests to the insufficiency of illness-related factors in explaining individual differences in QoL.

3.5.1. Implications for research and clinical practice

PAH and CTEPH do not take place in a vacuum, but on personal and situational contexts. The results of this study show that an examination of these contexts may offer a better understanding of the nature of patients' emotional wellbeing and QoL, as well as an explanation of individual differences in these domains. It is worth noting that almost twice as many patients in this sample showed clinically significant symptoms of anxiety (35.9%) as compared to clinically significant symptoms of depression (21.9%). This suggest that anxiety and apprehension of what may happen seems to create more emotional problems than the challenges patients may have to face in their day to day

[30]. In fact, the presence of clinically significant symptoms of anxiety, but nor depression, had a unique negative impact on the QoL of patients.

3.5.2. Limitations and future research

The findings presented here have some limitations and therefore should be interpreted with caution. The patients who took part in this study are members of a patient association, and it is not clear the extent to which they may differ from other non-member patients. This seems relevant in terms of their emotional wellbeing, as patients with elevated levels of depressive symptomatology may generally feel less motivated to become actively involved with patient associations, as suggested by a previous study [27]. Second, the sample size used here was relatively small, which may limit the generalizability of the findings. However, this has been a common limitation in other studies within this area, given the extremely low prevalence of the PAH and CTEPH.

3.6. Conclusions

Depressive and anxiety symptomatology constitute an extra burden to the QoL of patients, above and beyond disease severity. However, the presence of depressive and anxiety symptomatology cannot be solely explained on the basis of disease severity. The findings from this study highlight the relevance of personal and situational factors in explaining individual differences in emotional wellbeing and QoL.

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Chapter 4

Quality of life in patients with pulmonary hypertension: a needs-based approach

4.1. Abstract

Purpose: This study followed a needs-based quality of life (QoL) approach to examine whether pulmonary hypertension (PH) patients may gain QoL in the absence of health improvements. So far, research in this area has mostly focused on the health-related QoL of patients, neglecting relevant non-health factors. In this study, attention was devoted to examining the role of psychological flexibility and social support in increasing patients' perceived control and plausibly their ability to satisfy their needs. *Methods*: Seventy-five patients completed self-report measures of QoL, PH symptoms, functional disability, psychological flexibility, social support, and perceived control. *Results*: The results of a path analysis revealed that psychological flexibility exerted a statistically significant indirect effect on QoL via perceived control, while the indirect effect of social support showed a tendency towards statistical significance ($p = .64$). *Conclusions*: Psychological flexibility and social support may have attenuated the global impact of PH and given patients more control over their life circumstances; in turn, such control may have enabled them to circumvent the limitations imposed by PH to find alternative ways to satisfy their needs. Theoretical implications are discussed.

4.2. Introduction

Pulmonary hypertension (PH) is a disorder characterized by a progressive increase in pulmonary arterial pressure and vascular resistance, leading to right ventricular failure and death. The clinical classification of PH comprises a multitude of clinical conditions categorized into five major groups, according to their similarities in etiological and pathophysiological features:

1. Pulmonary arterial hypertension (PAH).
2. Pulmonary hypertension due to left heart disease.
3. Pulmonary hypertension due to lung diseases and/or hypoxia.
4. Chronic thromboembolic pulmonary hypertension (CTEPH)
5. Pulmonary hypertension with unclear multifactorial mechanisms.

Typically, patients with PH report a variety of unspecific symptoms (e.g. exertion dyspnea, palpitations, chest pain, and fatigue) and in some cases considerable high levels of functional disability. However, PH remains a condition without a cure for the majority of patients. In some cases, treatment is directed at managing the underlying associated disease (e.g. groups 2 and 3), in others, patients may be subjected to surgical procedures (i.e. pulmonary thromboendarterectomy for CTEPH), while in others, patients may receive disease-specific treatments (i.e. group 1); as a last resource amid great clinical deterioration, patients may undergo heart and/or lung transplantation [1]. Consequently, given the progressive nature of PH, the improvement of quality of life (QoL) of patients has become one of the greatest challenges faced by clinicians and researchers.

The field of QoL research in PH is still relatively new [2]. Until recently efforts were mostly directed at developing disease-specific medications and extending life

expectancy; the median time of survival of PAH patients still in the early 90's, before the introduction of disease-specific medications, was only 2.8 years [3]. Since then, the number of studies devoted to learning about the QoL of PH patients has increased, as lengthened survival has perhaps made issues related to QoL more salient than ever. However, the focus of the majority of the studies within this area of research has been restricted to the aspects of QoL specifically related to the health of patients, that is, to their *health-related QoL* (HRQL). Such interest has been explicitly stated in some cases [4, 5], while in others it has been implicitly reflected on the emphasis given to several indicators of health status and the use of outcome measures more indicative of *quality of health* than *quality of life* [6].

The assessment of HRQL can offer valuable information [7], most often regarding the level of impairment (i.e. "loss or abnormality of psychological, physiological or anatomical structure or function"), and disability (i.e. "any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being") [8]. The focus on these aspects is in fact a distinguishing feature of HRQL models and HRQL instruments [9], to the point that the terms "HRQL" and "health status" have been often used interchangeably. However, HRQL models are devised by researchers and imposed on patients [8,9], and therefore they may miss aspects unnoticed by researchers but highly relevant to patients [10]. For instance, three of the most commonly used HRQL models have been criticized for not including components related to the management of therapeutic regimes and self-management, even though these are aspects that may greatly affect the quality of patients' lives [9]. In addition, the emphasis on impairment and disability in HRQL assessment seems to connote that individuals with impaired health or physical disabilities cannot have a good quality of life.

In contrast to HRQL approaches, the *needs-based approach to QoL* asserts that life gains quality when individuals are able to satisfy their needs, and it is taken as axiomatic that QoL is highest when most needs are satisfied [11,12]. Here the impact of health status on QoL is not determined by the degree of impairment or disability, but by the extent to which these may interfere with need fulfillment. Health status is considered a major influence on QoL but it is also thought to interact with other relevant non-health factors (e.g. personality, social, financial factors) to influence QoL. Accordingly, this model can easily account for improvements in QoL that result from better adjustment to life circumstances rather than from changes in health status. Individuals with reduced mobility for example may still participate in everyday activities provided that architectural barriers are removed. The model can also account for changes in the relevance ascribed to specific functions, in cases for instance where specific needs may have become permanently frustrated. Someone diagnosed with a chronic illness may become unable to work, and as a result may decide to volunteer to retain his/her need for a purpose in life. Also in contrast to HRQL approaches, the needs-based QoL approach is based on the principle that "unlike beauty, which rest in the eye of the beholder, quality of life is inherently an attribute of the patient (or the "beholdee")" [10]. For this reason, needs-based QoL instruments only include items generated directly from patients, in order the capture what is important to patients.

Arguably, the needs-based model of QoL can be seen as a model depicting individuals *in motion* towards achieving need-satisfaction. That is, having the ability to satisfy one's needs seems to denote that some behaviour (overt or covert) must precede need satisfaction. This notion seems also present in theory and research on human needs and motivation, at the base of the needs-based approach to QoL, where individuals are seen as driven or motivated by their needs [11,12]. In the context of PH, and likely of

many other chronic illness, the ability to carry out behaviours devoted to satisfying one's needs may become compromised by the presence of functional disability; for example, the inability to do physical labour may prevent patients from working, and thus from satisfying several needs (e.g. independence and having a role in life). As a result, many individuals in this type of circumstances may resort to circumventing the limitations imposed by their illness and finding alternative ways of regaining their ability to satisfy their needs, and the availability of non-health factors may give them the necessary means to do so.

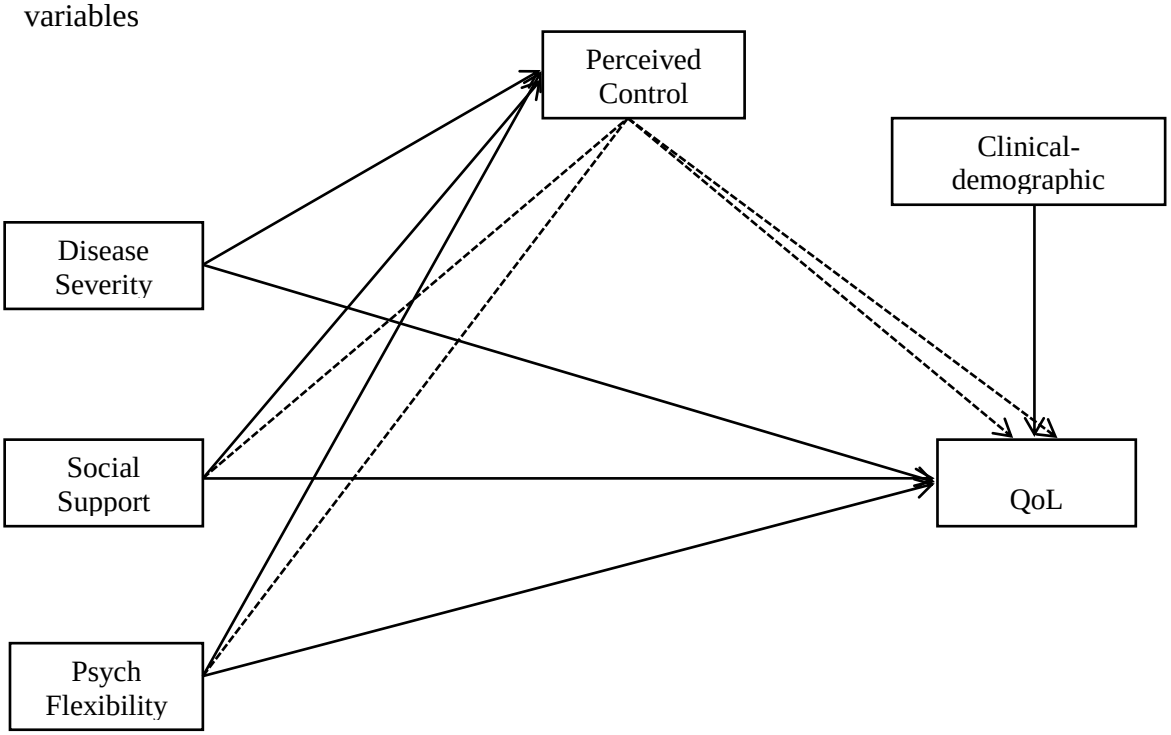
4.2.1. The present study

The potential significance of non-health factors in promoting higher levels of QoL among PH patients has been virtually unexplored, perhaps due to the predominance of HRQL approaches within this area of research. This issue however is of great practical relevance, given the chronic and progressive nature of PH. Accordingly, this study specifically focused on two non-health factors, psychological flexibility and social support; they were chosen due to their theoretical relevance and their relationship to individual and contextual factors, respectively. Psychological flexibility has been defined as "the ability to fully contact the present moment and the thoughts and feelings it contains without needless defense, and, depending upon what the situation affords, persisting in or changing behavior in the pursuit of goals and values" [13]. Showing high levels of psychological flexibility in times of adversity has been associated with higher levels of wellbeing [14]. Similarly, social support has been identified as highly relevant to PH patients; given the nature of their illness, patients may require not only emotional support and validation but also instrumental support [15, 16].

Accordingly, this study first sought to evaluate whether psychological flexibility and social support may have a direct effect on QoL, that is, on the level of need-satisfaction; it was hypothesized that 1) psychological flexibility, and 2) social support would exert a statistically significant impact on QoL, while accounting for the impact of disease severity. Second, this study explored whether psychological flexibility and social support may be associated with increased levels of control over life circumstances, and whether this may in turn be associated with increased ability to satisfy needs and thus higher levels of need satisfaction, despite the presence of functional disability. Accordingly, it was hypothesized that the effects of 3) psychological flexibility, and 4) social support on QoL would be mediated by perceived control. In addition, it was hypothesized that disease severity would have a direct effect on 5) perceived control and 6) QoL.

Figure 1

Theoretical model of associations between study variables and clinical-demographic variables



Note: Solid lines denote direct paths and dashed lines denote indirect paths. Psych Flexibility = psychological flexibility, QoL = quality of life

4.3. Methods

4.3.1. Participants

The study protocol was approved by the Ethics Committee of the Autonomous University of Madrid, Spain. Eligible participants were 18 years of age or older with a diagnosis of PH according to the World Health Organization Diagnostic Classification. Participants who had undergone a pulmonary thromboendarterectomy and who were unable to give informed consent or understand what was required from their participation were excluded from the study.

4.3.2. Procedure

The present study was presented to potential participants at member meetings held by the ANHP; potential participants who did not attend the meetings were also contacted by telephone with permission of the ANHP and told about the study. Individuals who agreed to participate were mailed a package with the informed consent form, the study measures, and a questionnaire inquiring about their demographic and clinical characteristics. Participants returned their questionnaire package using a pre-paid return envelope.

4.3.3. Measures

The Spanish adaptation of the *Cambridge Pulmonary Hypertension Outcome Review* (CAMPHOR) [17,18] comprises three scales: Symptoms, Activities, and QoL. The Symptoms scale contains 25 items and measures the extent to which individuals are affected by symptoms of PH. Answers to this scale are provided using a dichotomous response format (‘‘yes’’/‘‘no’’), which results in a score ranging from 0 to 25. The activities scale has 15 items and evaluates whether participants are able to carry out a series of activities from daily life. Each item has 3 response options: ‘‘Able to do on

own without difficulty'', ''Able to do on own with difficulty'', and ''Unable to do on own'', resulting in a score ranging from 0 to 30. These two scales constitute a measure of HRQL, reflecting the immediate health consequences of the disease. The QoL scale comprises 25 items and assesses the extent to which relevant individual needs are being fulfilled. Reponses to this scale are provided using a dichotomous format (''true'' or ''false''), which results in a score ranging from 0 to 25. Higher scores on the Symptoms, Activities, and QoL scales are indicative of higher levels of impairment, poorer functional disability, and low need fulfillment, respectively. The internal consistency (Cronbach's α) obtained from the Symptoms, Activities, and QoL in this sample was .90, .92, and .88, respectively.

The Acceptance and Action Questionnaire II (AAQ-II) [13] is a measure of psychological flexibility. The AAQ-II comprises seven items, answered on a 7-point Likert scale ranging from 1 ("never true") to 7 ("always true"), which results in a total score ranging from7 to 49. Higher scores on the AAQ-II denote lower levels of psychological flexibility (i.e. high psychological inflexibility). The internal consistency (Cronbach's α) obtained from this sample was .93. For this study, the Spanish adaptation of the AAQ-II was used [19].

The Multidimensional Scale of Perceived Social Support (MSPSS) [20] measures perceived social support from three different sources: a significant other, family, and friends. The MSPSS contains 12 items answered on a 7-point Likert scale, ranging from 1 ("Very Strongly Disagree") to 7 ("Very Strongly Agree"), which results in a total score ranging from 7 to 84. Higher scores denote higher levels of social support. The Spanish version of the MSPSS was used in this study [21], resulting in an internal consistency (Cronbach's α) of .94.

Perceived control was evaluated using the *Perceived Stress Scale* (PSS), which was designed to assess how unpredictable, uncontrollable, and overloaded respondents find their lives to be. Example items include: “In the last month, how often have you felt that you were unable to control the important things in your life?”, “In the last month, how often have you felt confident about your ability to handle your personal problems?”, and “In the last month, how often have you found that you could not cope with all the things that you had to do?”. Responses to the PSS are provided using a 5-point Likert scale, ranging from 0 (“Never”) to 4 (“Very often”). The10-item Spanish version of the PSS was used in this study [23], which results in a score ranging from 0 to 40. Higher scores indicate higher levels of perceived stress and lower levels of perceived control. The internal consistency (Cronbach’s α) obtained from this sample was .89.

4.3.4. Statistical analyses

SPSS 21 and Mplus7 were used to perform the statistical analyses. Missing data reached 1.72%, and were imputed using the expectation maximization algorithm after the Little’s MCAR test revealed no statistically deviation from randomness (χ^2 (291) = 36.95, p = 1.00). The demographic and medical characteristics were calculated by means of frequency and descriptive statistics. The associations between the outcome variable (i.e. QoL) and medical and demographic variables (i.e. age, sex, income level, and use of oxygen) were examined using the point-biserial and Pearson product-moment correlation coefficients in order to detect potential covariates for the main analysis. A principal component analysis (PCA) was carried out to reduce the two HRQL scales (i.e. Symptoms and Activities) from the CAMPHOR into a single disease severity component. A path analysis with full information maximum likelihood

estimation (FIML) was carried out to evaluate the hypothesized relationships between health status, psychological flexibility, social support, perceived control, and QoL, adjusting for medical and demographic covariates. A non-significant ($p > .05$) $\chi 2$ test, RMSEA value < 0.05, CFI > 0.95, and TLI > 0.90 were considered indicators of acceptable model fit [24].

4.4. Results

4.4.1. Participants

Seventy-five participants took part in the present study. The sample showed a median age of 50 years (IQR = 40.75 – 60.00) and was mostly composed by females (80%). Detailed demographic and medical information can be found in Table 1. Participants were representative of most regions of Spain, and received treatment in different medical centers.

Table 1.
Demographic and clinical characteristics of participants (N = 75)

		Mean	*SD*
Age		49.51	13.44
Months since diagnosis		105.19	91.65
		N	*%*
Sex	Female	60	80.00
	Male	15	20.00
Marital status	Single	12	16.00
	Common law/married	52	69.30
	Divorced	9	12.00
	Widowed	2	2.7
Work status	Student	5	6.70
	Working	9	12.00
	Unemployed	5	6.70
	Homemaker	16	21.30
	Long-term leave	30	40.00
	Retired	10	13.30
Income	0 – 999€	15	20
	1000 – 1999€	30	40
	2000 – 2999€	10	13.30
	> 3000€	5	6.70
	missing	15	20.00
Diagnosis	PAH		
	Idiopathic	32	42.70
	Congenital heart disease	11	14.70
	Heritable	6	8.00
	Toxin	5	6.70
	Connective tissue	5	6.70
	HIV	1	1.30
	Portal Hypertension	1	1.30
	PH due to left heart disease	3	4.00
	CTEPH	8	10.70
	PH unclear mult. mechanisms	3	4.00
Oxygen use	Yes	49	65.30
	No	26	37.70

Note: HIV = human immunodeficiency virus, CTEPH = Chronic thromboembolic pulmonary hypertension, PAH = pulmonary arterial hypertension, PH = pulmonary hypertension, PH unclear mult. mechanisms = Pulmonary hypertension with unclear multifactorial mechanisms, SD = standard deviation

4.4.2. Preliminary analyses

The results of the correlational analysis are shown in Table 2. Older age and use of oxygen were associated with lower levels of HRQL. Oder age was also associated with poorer QoL, and thus was included as a covariate in the main analyses; no other clinical or demographic variables were correlated with QoL or HRQL. The results of the PCA showed that the single disease severity extracted component accounted for 91.05% of the variance.

Table 2
Correlations analyses between study variables and clinical/demographic variables

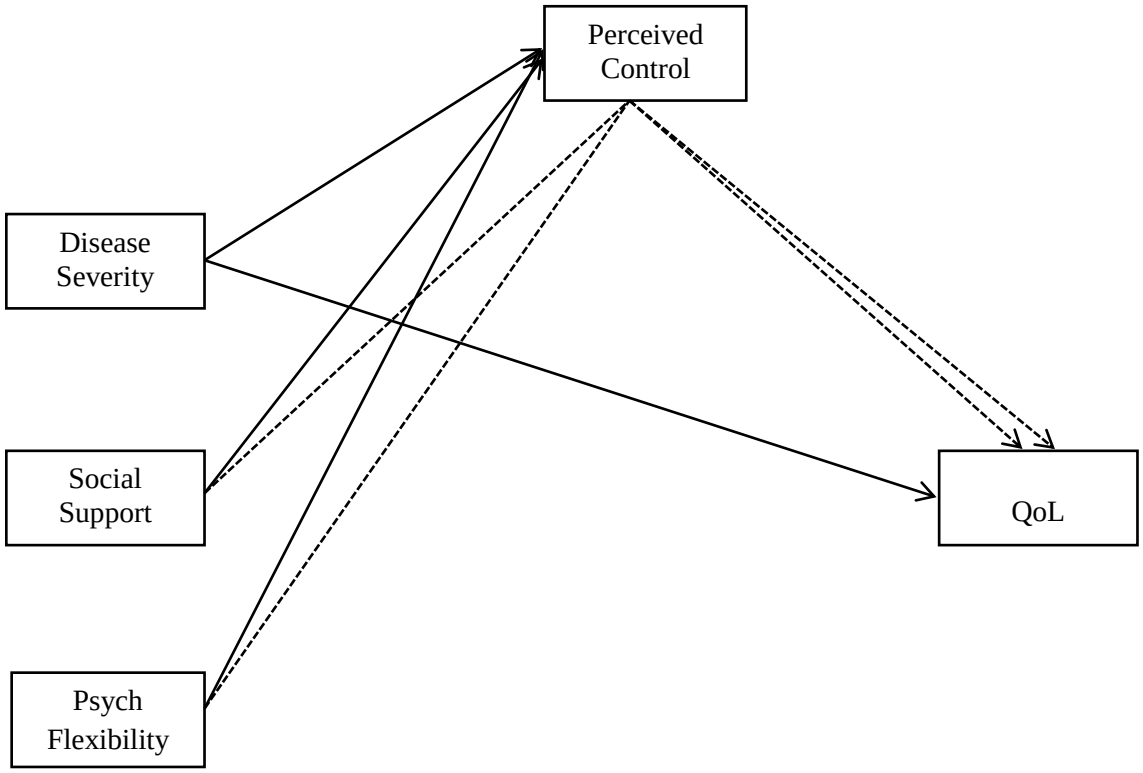
	Age	Sex	TSDx	Income	Oxygen
Disease severity	.417**	.049	-.112	-.185	.237*
Psychological flexibility	.020	.104	.170	-.084	-.001
Social support	-.167	.-002	-.152	.041	-.042
Stress	.049	.043	.160	-.142	-.051
QoL	.259*	.096	-.003	-.143	.198

Note: TSDx = time since diagnosis, QoL = quality of life

4.4.3. Path analysis

The initial model did not offer support to the hypothesized direct paths from psychological flexibility to QoL, from social support to QoL, and from age to QoL. These paths resulted in non-significant coefficients and were therefore removed from the model. The final model (Figure 2) showed a good fit to the data (χ^2 (2) = 0.56, p = 0.76, RMSEA= 0.00 (CI = 0.00 – 0.16), CFI = 1.00, and TLI = 1.04) and explained 71.90% of the variance in QoL. The direct and indirect paths coefficients from the final model are presented in Table 3. The indirect path from psychological flexibility to QoL was fully mediated by perceived control. The indirect path from social support to QoL was also fully mediated by perceived control, although it only showed a tendency towards statistical significance (p = .06).

Figure 2
Final model of relationships among study variables



Note: Solid lines denote direct paths and dashed lines denote indirect paths. Psych Flexibility = psychological flexibility, QoL = quality of life

Table 3
Direct and indirect path coefficients of final model

	β	SE	p
Effects on QoL			
Disease severity	.73	.05	>.001
P. control	.23	.07	.001
Effects on p. control			
Disease severity	.28	.09	.001
Psychological flexibility	.44	.09	>.001
Social Support	-.21	.09	.025
Indirect effects on QoL			
Psychological flexibility > p. control > QoL	.10	.04	.007
Social Support > p. control > QoL	-.05	.03	.064

Note: P. control = perceived control, QoL = quality of life

4.5. Discussion

The objective of the present study was to gain insight into the potential relevance of psychological flexibility and social support in improving the QoL of PH patients, following a QoL needs-based approach. The results failed to support a direct association between psychological flexibility/social support and QoL; however, it was found that psychological flexibility and social support had an indirect effect on QoL via perceived control. These results suggest that psychological flexibility and social support, as well as other psychosocial factors, may reduce the burden of PH by enabling patients to take actions directed at circumventing the limitations of their illness and thus regaining satisfaction of their needs.

Consistently with previous research [15,16], this study corroborates that PH can exert a significant impact on the QoL of patients. The results revealed that individuals with high levels of disease severity reported lower levels of need satisfaction. In some cases this may have been the direct of result of impairment and functional disability. For instance, having to rely on others for routine care may have interfered with the fulfillment of the need for independence, whereas the inability to work may have left unmet the need for a clear role in life. In other cases the impact of impairment and functional disability may have been not as direct but nonetheless significant; difficulties with going outside may have led to feelings of isolation and interfered with the need for social integration. Further, individuals with higher levels of disease severity also reported lower levels of perceived control, which speaks of the all-encompassing impact of PH in the lives of patients.

Contrarily to what had been hypothesized, psychological flexibility and social support did not have a direct effect on the QoL of patients while taking into consideration the effect of disease severity. The QoL scale used in this study was

designed to assess needs that could be frustrated as the result of having PH [17]; therefore, it seems that having high levels of psychological flexibility and social support were of little use to patients when trying to satisfy needs that may have been frustrated as the result of functional disability.

Nonetheless, individuals with higher levels of psychological flexibility reported higher levels of perceived control, taking into account their level of disease severity. By definition, individuals with higher levels of psychological flexibility report less entanglement with aversive private events (i.e. thoughts, feeling, and body sensations) and thus less emotional reactivity in response to aversive private events or situations. Also by definition, psychological flexibility entails being sensitive to private events and environmental demands in order persist in or change behaviour in the service of achieving valued ends [13]. Therefore, psychological flexibility may have contributed to attenuating the psychological and emotional impact of PH, enabling patients to direct their time and energy towards finding alternative ways of doing things that were important to them, despite the potential interference of PH; in turn, doing valued things may have led to need satisfaction. These results seem highly congruent with those of one qualitative study, where PH patients reported that learning to live with uncertainty, and thus in the company of aversive thoughts and feelings, was highly important in order to move on with their lives [25].

Similarly, individuals with higher levels of social support reported higher levels of perceived control. From a psychological and emotional viewpoint, having social support may have enabled participants to ventilate their concerns with significant others, and this may have helped them not only to reduce their emotional arousal, but also to satisfy their need for social integration and validation. At the same time, having social support may have also increased the level of instrumental support, which may

have been highly important in the context of loss of functional ability. Instrumental support may have translated into having help with routine care and enjoying a higher household income.

4.5.1. Implications

Ultimately, it seems that the utility of non-health factors in providing need satisfaction depends on whether they are manifested into behaviours, that is, into new abilities that allow patients to circumvent the effects of illness (i.e. functional *disability*) in order to regain satisfaction of their needs. Again, *having the ability to satisfy one' needs* implies that one must have a resource (e.g. functional ability, social support, money) and must carry out a behaviour directed at satisfying a need; individuals who do not work, do not ventilate their concerns with others, and do not buy things, may not see satisfied their needs for a role in life, validation, and financial independence, despite being able to work, having social support, and money, respectively. In the case of this study, psychological flexibility may have enabled patients to re-direct their lives onto valued directions, and it may have been the behaviour of "moving on" what may have eventually led to the satisfaction of needs. Social support may have enabled participants to ventilate or ask for help to go out, and it is these two behaviours what may have also led to need satisfaction. This notion seems compatible with the vast amount of research that has examined adjustment following diagnoses of chronic illnesses [26]. According to this literature, individuals often engage in a multitude of behaviours in order to reorganize their lives and possibly to increase their QoL. In some cases such behaviour may manifest into a search for meaning and purpose, engagement in volunteer activities, and more time spent with significant others. The results of this study and the findings from this literature seem to converge on the notion that behaviour may be an important

antecedent of QoL; that is, quality of life seems to be the result not only of one's health status and life circumstances, but also the result of the engagement with this. To my knowledge, the potential relevance of individuals' behaviour has not been explicitly articulated in existing QoL models and research [9, 12, 27], but it constitutes a factor that may advance our understanding of individual differences in QoL.

4.5.2. Limitations

The findings presented here should be interpreted in light of several limitations. This constitutes a cross-sectional study and therefore it not possible to make inferences about causation. Second, the sample size used here was relatively small, and this may limit the generalizability of the findings. However, other studies investigating this population have used samples of similar sizes, given the low prevalence of some forms of PH.

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Capítulo 5

Conclusiones generales

5.1. Aportaciones

El presente trabajo de tesis tuvo como objetivo general llenar un vacío en la investigación sobre la calidad de vida en el contexto de la HP. Como ya ha sido expuesto, la HP es un trastorno con un alto potencial de ejercer un profundo impacto en la vida de quienes lo padecen. El deterioro en el estado de salud y la discapacidad funcional asociada a la HP pueden tener fuertes implicaciones en diversos ámbitos, incluyendo el emocional, social, y profesional. Aun así, la investigación sobre calidad de vida en pacientes con HP había estado muy exclusivamente centrada en el impacto de diversos indicadores de salud, obviado diversos factores psicosociales de potencial relevancia.

Tomando esto en cuenta, se realizaron tres estudios con diferentes objetivos. El primero de ellos estuvo destinado a la validación y adaptación de un instrumento de calidad de vida específicamente diseñado para la evaluación de la calidad de vida relacionada con la salud y calidad de vida de pacientes con HP. Con ello se pretendió dar respuesta a limitaciones metodológicas relacionadas con la evaluación de la calidad de vida en esta población. El segundo estudio estuvo destinado a indagar sobre la posible implicación de factores individuales y situacionales en la presencia de sintomatología de depresión y ansiedad en pacientes con HP. Hasta el momento, los estudios anteriores no habían tomado en consideración este tipo de variables, a pesar de que existe evidencia de que los indicadores de salud resultan insuficientes para explicar la presencia de síntomas de depresión y ansiedad. Por último, el tercer estudio tuvo como objetivo evaluar la calidad de vida de los pacientes con HP desde la perspectiva del modelo de calidad de vida basado en las necesidades. Hasta el momento, la evaluación de la calidad de vida en esta población había estado basada exclusivamente en modelos de calidad de vida relacionada con la salud. Debido a este motivo, la

potencial relevancia para la calidad de vida de diversos aspectos psicosociales no había sido tomada en consideración.

5.2. Implicaciones

Tal y como ha sido expuesto anteriormente, la evaluación de la calidad de vida en el contexto de la HP ha sido frecuentemente evaluada utilizando instrumentos de calidad de vida relacionada con la salud y también instrumentos de estado general de salud. Estos problemas metodológicos reflejan la falta de entendimiento acerca del constructo de calidad de vida y otros constructos relacionados. Sin embargo, se ha visto que la evaluación incorrecta de la calidad de vida en estudios previos ha llevado a la interpretación incorrecta de resultados y posiblemente a toma de decisiones erróneas [1,2]. En este sentido, se espera que la adaptación del cuestionario CAMPHOR contribuya a una evaluación de la calidad de vida en pacientes con HP con alta validez y fundamentación teórica.

Por otra parte, el presente trabajo de tesis ha contribuido también a resaltar el papel de los factores personales y situacionales en el desarrollo de problemas de depresión y ansiedad en pacientes con HP. Tal y como se había visto en previas investigaciones, la presencia de sintomatología depresiva y de ansiedad no podía ser explicada basándose solamente en el grado de severidad de la enfermedad. Tal y como sugieren los resultados del presente trabajo de tesis, las circunstancias de vida y los factores personales pueden tanto atenuar como exacerbar el impacto de la enfermedad sobre el estado emocional de los pacientes. Además, también se ha visto que al menos la presencia de síntomas de ansiedad clínicamente significativos puede tener un impacto único sobre la calidad de vida de los pacientes, incluso tomando en cuente el grado de severidad de la enfermedad. En cierto sentido, los resultados presentados aquí son

preliminares, y deberán ser contrastados con los de futuras investigaciones sobre esta temática; idealmente, dichas investigaciones utilizarán diseños de investigación más complejos y muestras de mayor tamaño. Sin embargo, los resultados que aquí se presentan son congruentes con los del pequeño número de estudios cualitativos y descriptivos que han intentado indagar sobre estos aspectos utilizando metodologías no cuantitativas. Por lo tanto, estos resultados confirman la necesidad de prestar una atención multidisciplinar a los pacientes de HP y a ser posible de forma preventiva y desde el mismo momento del diagnóstico, con el objetivo de preparar a los pacientes de cara a los posibles problemas psicosociales que pudieran surgir.

De forma más específica, los resultados que aquí se presentan sugieren que la HP puede estar asociada a altos niveles de depresión, pero sobre todo ansiedad. Este hallazgo parece también congruente con los de estudios cualitativos y descriptivos previos [3]. A pesar de que el presente trabajo de tesis no examinó los posibles factores que podrían haber dado lugar a los problemas de ansiedad, tales investigaciones previas sugieren que ésta podría ser el resultado de los altos niveles de incertidumbre y miedo asociados a la enfermedad. Desde un punto de vista clínico, se ha visto por ejemplo que los pacientes de HP pueden sufrir de forma regular el temor al empeoramiento clínico, y según la experiencia de algunos clínicos, a que los dispositivos que suministran su medicación puedan sufrir averías. Tal y como se ha mencionado anteriormente, muchos pacientes con HAP deben llevar consigo de forma permanente tales dispositivos, los cuales pueden suministrar la medicación de forma intravenosa o subcutánea. En caso de que hubiera alguna avería, los pacientes deben cambiar a algún dispositivo de repuesto a intentar llegar a un hospital dentro de un período de media hora; de no hacerlo podrían sufrir una brusca y fuerte recaída en su estado clínico. De forma similar y también desde la experiencia clínica, en algunos casos los pacientes pueden sentir miedo de

incrementar su nivel de actividad física y provocarse síntomas asociados a la HP. Por lo tanto, en algunos casos los pacientes pueden volverse hipervigilantes con respecto a su respuesta fisiológica, lo cual en sí mismo puede provocar síntomas de ansiedad y por lo tanto el aumento de la actividad fisiológica que en un primer momento quería evitarse. Por lo tanto, este tipo de factores deberán ser estudiados con más detenimiento con el objetivo de crear intervenciones destinadas a hacer frente a los problemas de ansiedad que puedan incluir aspectos de relevancia para los pacientes de HP.

Desde un punto de vista más positivo, los resultados del presente trabajo de tesis también demuestran que la presencia de recursos psicosociales puede favorecer al incremento de la calidad de vida de los pacientes, a pesar de las limitaciones que pudiera ejercer la enfermedad en sí. Específicamente, la flexibilidad psicológica y el apoyo social parecen haber permitido a los pacientes recuperar parte del territorio perdido a la enfermedad, y buscar nuevas vías de satisfacción de sus necesidades. Desde un punto de vista investigativo, estos resultados también resaltan la relevancia de los factores psicosociales como moduladores de la calidad de vida de los pacientes. Desde un punto de vista clínico, también resaltan la relevancia de tomar en consideración no solo los problemas psicológicos que pudieran estar asociados directamente a la enfermedad (e.g. ansiedad), sino también otros factores psicológicos y sociales de tipo más general, tales como la flexibilidad psicológica.

En resumen, la investigación destinada a alcanzar un mayor entendimiento de los factores psicosociales asociados al estado emocional y la calidad de vida de los pacientes con HP ha sido limitada, y el presente trabajo de tesis ha tenido precisamente como objetivo llenar este vacío en la literatura. A pesar de que los resultados aquí presentados deberán ser evaluados en futuros estudios, se muestra evidencia de que el estado emocional y la calidad de vida de los pacientes con HP podrían mejorarse

mediante las intervenciones de tipo psicosocial. Este es un aspecto de gran relevancia práctica, dada la naturaleza progresiva de la HP.

5.3. Referencias

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Apéndice

Instrumentos

Instrumentos presentados en el Capítulo 2

El cuestionario CAMPHOR aparece descrito en el Capítulo 2. Sin embargo, no puede presentarse aquí porque está sujeto a copyright. Sin embargo, una muestra de sus ítems aparece en "Table 1" en la página 39.

Cuestionario Nottingham de Calidad de Vida

A continuación verá algunos de los problemas que la gente puede tener en su vida diaria. Lea atentamente la lista de problemas. En cada problema, si usted lo tiene, marque una cruz en la castilla del "**SI**". Si usted no lo tiene, marque una cruz en la casilla del "**NO**". Por favor, conteste todas las preguntas, si no está muy seguro/a de contestar "SI" o "NO" señale la respuesta que usted crea que es la más cierta en la **actualidad**.

1. Siempre estoy fatigado	SI	NO
2. Tengo dolor por las noches	SI	NO
3. Las cosas me deprimen	SI	NO
4. Tengo un dolor insoportable	SI	NO
5. Tomo pastillas para dormir	SI	NO
6. He olvidado qué es pasarlo bien	SI	NO
7. Tengo los nervios de punta	SI	NO
8. Tengo dolor al cambiar de postura	SI	NO
9. Me encuentro solo	SI	NO
10. Sólo puedo andar por dentro de casa	SI	NO
11. Me cuesta agacharme	SI	NO
12. Todo me cuesta un esfuerzo	SI	NO
13. Me despierto antes de hora	SI	NO
14. Soy totalmente incapaz de andar	SI	NO
15. Últimamente me resulta difícil contactar con la gente	SI	NO
16. Los días se me hacen interminables	SI	NO
17. Me cuesta subir y bajar escaleras	SI	NO
18. Me cuesta coger las cosas	SI	NO
19. Tengo dolor al andar	SI	NO
20. Últimamente me enfado con facilidad	SI	NO
21. Creo que soy una carga para los demás	SI	NO
22. Me paso la mayor parte de la noche despierto	SI	NO
23. Siento que estoy perdiendo el control de mí mismo	SI	NO
24. Tengo dolor cuando estoy de pie	SI	NO
25. Me cuesta vestirme	SI	NO
26. Enseguida me quedo sin fuerzas	SI	NO
27. Me cuesta estar de pie mucho rato (Por ejemplo, haciendo cola)	SI	NO
28. Tengo dolor constantemente	SI	NO

29. Me cuesta mucho dormirme	SI	NO
30. Creo que no tengo a nadie en quien confiar	SI	NO
31. Las preocupaciones me desvelan por la noche	SI	NO
32. Creo que no vale la pena vivir	SI	NO
33. Duermo mal por las noches	SI	NO
34. Me cuesta llevarme bien con la gente	SI	NO
35. Necesito ayuda para caminar por fuera de casa (como por ejemplo, bastón, muletas o alguien que me ayude)	SI	NO
36. Tengo dolor al subir y bajar escaleras	SI	NO
37. Me despierto desanimado	SI	NO
38. Tengo dolor cuando estoy sentado	SI	NO

Instrumentos presentados en el Capítulo 3

El cuestionario CAMPHOR aparece descrito en el Capítulo 3. Sin embargo, no puede presentarse aquí porque está sujeto a copyright. Sin embargo, una muestra de sus ítems aparece en "Table 1" en la página 39.

Escala de Ansiedad y Depresión

Los médicos conocen la importancia de los factores emocionales en la mayoría de enfermedades. No es preciso que preste atención a los números que aparecen a la izquierda. Lea cada pregunta y subraye la respuesta que usted considere que coincide con su propio estado emocional **en la última semana**. No es necesario que piense mucho tiempo cada respuesta: en este cuestionario las respuestas espontáneas tiene más valor que las que se piensan mucho.

A.1. Me siento tenso/a o nervioso/a:
3. Casi todo el día
2. Gran parte del día
1. De vez en cuando
0. Nunca

D.1. Sigo disfrutando de las cosas como siempre:
0. Ciertamente, igual que antes
1. No tanto como antes
2. Solamente un poco
3. Ya no disfruto con nada

A.2. Siento una especie de temor como si algo malo fuera a suceder:
3. Sí, y muy intenso
2. Sí, pero no muy intenso
1. Sí, pero no me preocupa
0. No siento nada de eso

D.2. Soy capaz de reírme y ver el lado gracioso de las cosas:
0. Igual que siempre
1. Actualmente, algo menos
2. Actualmente, mucho menos
3. Actualmente, en absoluto

A.3. Tengo la cabeza llena de preocupaciones:
3. Casi todo el día
2. Gran parte del día

1. De vez en cuando
0. Nunca

D.3. Me siento alegre:
3. Nunca
2. Muy pocas veces
1. En algunas ocasiones
0. Gran parte del día

A.4. Soy capaz de permanecer sentado/a tranquilo/a y relajado/a:
0. Siempre
1. A menudo
2. Raras veces
3. Nunca

D.4. Me siento lento/a y torpe:
3. Gran parte del día
2. A menudo
1. A veces
0. Nunca

A.5. Experimento una desagradable sensación de "nervios y hormigueos" en el estómago:
0. Nunca
1. Sólo en algunas ocasiones
2. A menudo
3. Muy a menudo

D.5. He perdido el interés por mi aspecto personal:
3. Completamente
2. No me cuido como debería hacerlo
1. Es posible que no me cuide como debiera
0. Me cuido como siempre lo he hecho

A.6. Me siento inquieto/a como si no pudiera parar de moverme:
3. Realmente mucho
2. Bastante
1. No mucho
0. Nunca

D.6. Espero las cosas con ilusión:
0. Como siempre
1. Algo menos que antes

2. Mucho menos que antes
3. En absoluto

A.7. Experimento de repente sensaciones de gran angustia o temor:
3. Muy a menudo
2. Con cierta frecuencia
1. Raramente
0. Nunca

D.7. Soy capaz de disfrutar con un buen libro o con un buen programa de radio o televisión:
0. A menudo
1. Algunas veces
2. Pocas veces
3. Casi nunca

Escala de Satisfacción con la Vida

A continuación hay cinco frases, que reflejan cómo pueden pensar y sentirse las personas respecto a su vida. Con la siguiente graduación de 1 a 7, indique con toda sinceridad en qué punto de ellas se encuentra y siente.

1	2	3	4	5	6	7
no, en absoluto	no, apenas	más bien no	ni sí, ni no	más bien sí	sí, bastante	sí, del todo

1. Mi vida, en casi todo, responde a lo que aspiro.	1	2	3	4	5	6	7
2. Las condiciones de mi vida son buenas.	1	2	3	4	5	6	7
3. Estoy satisfecho con mi vida.	1	2	3	4	5	6	7
4. Hasta ahora, en mi vida, he logrado cosas que eran importantes para mí.	1	2	3	4	5	6	7
5. Si volviese a nacer, cambiaría bastantes cosas en mi vida.	1	2	3	4	5	6	7

Test de Orientación a la Vida

Las siguientes preguntas se refieren a como Usted ve la vida en general. Después de cada pregunta, díganos, si Usted está de acuerdo o en desacuerdo.
No hay respuestas correctas o incorrectas—solo nos interesa su opinión.

1	2	3	4	5
Estoy completamente en desacuerdo	Estoy parcialmente en desacuerdo	No estoy ni de acuerdo ni en desacuerdo	Estoy de acuerdo parcialmente	Estoy de acuerdo completamente

1. En tiempos difíciles, suelo esperar lo mejor	1	2	3	4	5
2. Si algo malo me tiene que pasar, estoy seguro de que me pasará	1	2	3	4	5
3. Siempre soy optimista en cuanto al futuro	1	2	3	4	5
4. Rara vez espero que las cosas salgan a mi manera	1	2	3	4	5
5. Casi nunca cuento con que me sucedan cosas buenas	1	2	3	4	5
6. En general, espero que me ocurran más cosas buenas que malas	1	2	3	4	5

Instrumentos presentados en el Capítulo 4

El cuestionario CAMPHOR aparece descrito en el Capítuo 4. Sin embargo, no puede presentarse aquí porque está sujeto a copyright. Sin embargo, una muestra de sus ítems aparece en “Table 1” en la página 39.

Escala de Apoyo Social Percibido

Lea cada una de las siguientes frases cuidadosamente. Indique su acuerdo con cada una de ellas empleando esta escala:

1	2	3	4	5	6	7
totalmente en desacuerdo	bastante en desacuerdo	más bien en desacuerdo	ni de acuerdo ni en desacuerdo	más bien de acuerdo	bastante de acuerdo	totalmente de acuerdo

1. Hay una persona que está cerca cuando estoy en una situación difícil	1	2	3	4	5	6	7
2. Existe una persona especial con la cual yo puedo compartir penas y alegrías	1	2	3	4	5	6	7
3. Mi familia realmente intenta ayudarme	1	2	3	4	5	6	7
4. Obtengo de mi familia la ayuda y el apoyo emocional que necesito	1	2	3	4	5	6	7
5. Existe una persona que realmente es una fuente de bienestar para mí	1	2	3	4	5	6	7
6. Mis amigos realmente tratan de ayudarme	1	2	3	4	5	6	7
7. Puedo contar con mis amigos cuando las cosas van mal	1	2	3	4	5	6	7
8. Puedo hablar de mis problemas con mi familia	1	2	3	4	5	6	7
9. Tengo amigos con los que puedo compartir las penas y alegrías	1	2	3	4	5	6	7
10. Existe una persona especial en mi vida que se preocupa por mis sentimientos	1	2	3	4	5	6	7
11. Mi familia se muestra dispuesta a ayudarme para tomar decisiones	1	2	3	4	5	6	7
12. Puedo hablar de mis problemas con mis amigos	1	2	3	4	5	6	7

Escala de Estrés Percibido

Las preguntas en esta escala hacen referencia a sus sentimientos y pensamientos durante el **último mes**. En cada caso, por favor indique con una "X" cómo usted se ha sentido o ha pensado en cada situación.

0	1	2	3	4
Nunca	Casi nunca	De vez en cuando	A menudo	Muy a menudo

1. En el último mes, ¿con qué frecuencia ha estado afectado por algo que ha ocurrido inesperadamente?	0	1	2	3	4
2. En el último mes, ¿con qué frecuencia se ha sentido incapaz de controlar las cosas importantes en su vida?	0	1	2	3	4
3. En el último mes, ¿con qué frecuencia se ha sentido nervioso o estresado?	0	1	2	3	4
4. En el último mes, ¿con qué frecuencia ha estado seguro sobre su capacidad para manejar sus problemas personales?	0	1	2	3	4
5. En el último mes, ¿con qué frecuencia ha sentido que las cosas le van bien?	0	1	2	3	4
6. En el último mes, ¿con qué frecuencia ha sentido que no podía afrontar todas las cosas que tenía que hacer?	0	1	2	3	4
7. En el último mes, ¿con qué frecuencia ha podido controlar las dificultades de su vida?	0	1	2	3	4
8. En el ultimo mes, ¿con que frecuencia se ha sentido que tenía todo bajo control?	0	1	2	3	4
9. En el último mes, ¿con qué frecuencia ha estado enfadado porque las cosas que le han ocurrido estaban fuera de su control?	0	1	2	3	4
10. En el último mes, ¿con qué frecuencia ha sentido que las dificultades se acumulan tanto que no puede superarlas?	0	1	2	3	4

Cuestionario de Aceptación y Acción

Debajo encontrará una lista de afirmaciones. Por favor, puntúe en qué grado cada afirmación **es verdad para usted**. Use la siguiente escala para hacer su elección.

1	2	3	4	5	6	7
Nunca es verdad	Muy raramente es verdad	Raramente es verdad	A veces es verdad	Frecuentemente es verdad	Casi siempre es verdad	Siempre es verdad

1. Mis experiencias y recuerdos dolorosos hacen que me sea difícil vivir la vida que querría	1	2	3	4	5	6	7
2. Tengo miedo de mis sentimientos	1	2	3	4	5	6	7
3. Me preocupa no ser capaz de controlar mis preocupaciones y sentimientos	1	2	3	4	5	6	7
4. Mis recuerdos dolorosos me impiden llevar una vida plena	1	2	3	4	5	6	7
5. Mis emociones interfieren en cómo me gustaría que fuera mi vida	1	2	3	4	5	6	7
6. Parece que la mayoría de la gente lleva su vida mejor que yo	1	2	3	4	5	6	7
7. Mis preocupaciones interfieren en el camino de lo que quiero conseguir	1	2	3	4	5	6	7